



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>

KC

14333

NEDL TRANSFER

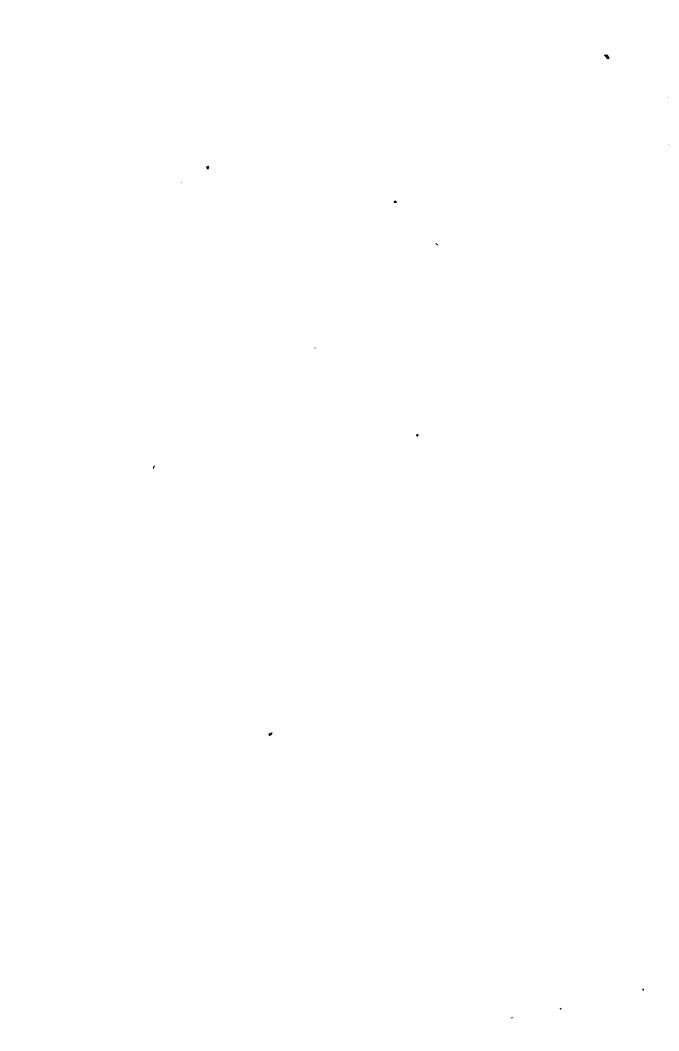


HN 3FKR J

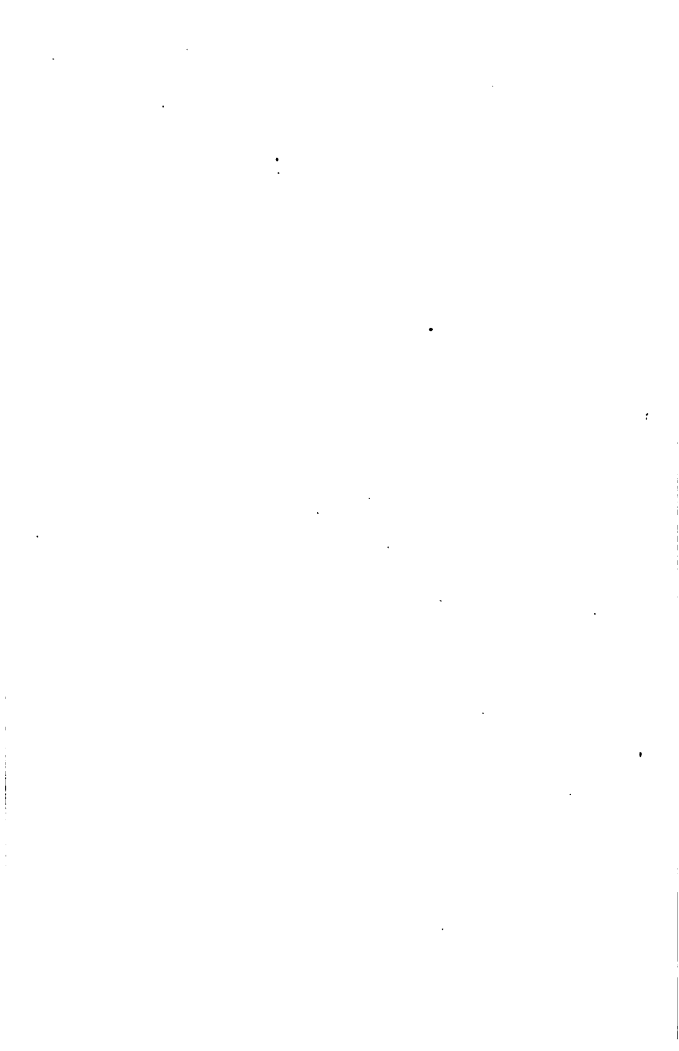
KC14333

*42-54/3(3)





THE
NATURAL HISTORY OF SELBORNE.
Vol. I.



CASSELL'S NATIONAL LIBRARY.

THE
NATURAL HISTORY
OF
SELBORNE.

BY
THE REV. GILBERT WHITE, A.M.

VOL. I.



CASSELL & COMPANY, LIMITED:
LONDON, PARIS & MELBOURNE.

1893.

KC14333



INTRODUCTION.

GILBERT WHITE was born in the village of Selborne on the 18th of July, in the year 1720. His father was a gentleman of good means, with a house at Selborne and some acres of land. Gilbert had his school training at Basingstoke, from Thomas Warton, the father of the poet of that name, who was born at Basingstoke in 1728, six years younger than his brother Joseph, who had been born at Dunsford, in Surrey. Thomas Warton, their father, was the youngest of three sons of a rector of Breamore, in the New Forest, and the only son of the three who was not deaf and dumb. This Thomas, the elder, was an able man, who obtained a fellowship at Magdalen College, Oxford, became vicar of Basingstoke, in Hampshire, and was there headmaster of the school to which young Gilbert White was sent. He was referred to in Amhurst's "*Terræ Filius*" as "a reverend poetical gentleman;" he knew Pope, and had credit enough for his verse to hold the office of Professor of Poetry at Oxford from 1718 to 1728. His genius for writing middling verse passed on to his

more famous sons, Joseph and Thomas, and they both became in due time Oxford Professors of Poetry.

Gilbert White passed on from school to Oxford, where he entered Oriel College in 1739. He became a Fellow of Oriel, graduated M.A. in 1746, at the age of six-and-twenty, and six years afterwards he served as one of the Senior Proctors of the University. His love of nature grew with him from boyhood, and was associated with his earliest years of home. His heart abided with his native village. When he had taken holy orders he could have obtained college livings, but he cared only to go back to his native village, and the house in which he was born, paying a yearly visit to Oxford, and in that house, after a happy life that extended a few years over the threescore and ten, he died on the 26th of June, 1793.

Gilbert White never married, but lived in peaceful performance of light clerical duties and enjoyment of those observations of nature which his book records. His brothers, who shared his love of nature, aided instead of thwarting him in his studies of the natural history of Selborne, and as their lives were less secluded and they did not remain unmarried, they provided him with a family of young people to care about, for he lived to register the births of sixty-three nephews and nieces.

It was one of his brothers, who was a member of the Royal Society, by whom Gilbert White was persuaded, towards the close of his life, to gather his

notes into a book. It was first published in a quarto volume in the year of the outbreak of the French Revolution with the fall of the Bastille. He was more concerned with the course of events in a martin's nest than with the crash of empires, and no man ever made more evident the latent power of enjoyment that is left dead by those who live uneventful lives surrounded by a world of life and change and growth which they want eyes to see. Gilbert White was in his seventieth year when his book appeared, four years before his death. It was compiled from letters addressed to Thomas Pennant and the Hon. Daines Barrington.

Thomas Pennant was a naturalist six years younger than Gilbert White. He was born at Downing, in Flintshire, in 1726, and died in 1798, like White, in the house in which he had been born. His love of Natural History made him a traveller at home and abroad. He counted Buffon among his friends. He had written many books before the date of the publication of White's "Selborne." Pennant's "British Zoology," his "History of Quadrupeds" and "Arctic Zoology," had a high reputation. He wrote also a Tour in Wales and a History of London.

Daines Barrington, fourth son of the first Viscount Barrington, was a year younger than Pennant, and died in 1800. He became Secretary to Greenwich Hospital, a Fellow of the Society of Antiquaries, and President of the Royal Society. His "Miscellanies,"

published in 4to in 1781, deal with questions of Natural History, and of Antiquities, including a paper first published in 1775 asserting the possibility of approaching the North Pole. His most valued book was one of "Observations on the more Ancient Statutes."

H. M.

THE NATURAL HISTORY OF SELBORNE.

LETTERS ADDRESSED TO THOMAS PENNANT, ESQ.

LETTER I.

THE parish of Selborne lies in the extreme eastern corner of the county of Hampshire, bordering on the county of Sussex, and not far from the county of Surrey; is about fifty miles south-west of London, in latitude fifty-one, and near mid-way between the towns of Alton and Petersfield. Being very large and extensive, it abuts on twelve parishes, two of which are in Sussex, viz., Trotton and Rogate. If you begin from the south and proceed westward, the adjacent parishes are Emshot, Newton Valence, Faringdon, Hartley Maudnit, Great Ward le Ham, Kingsley, Hadleigh, Bramshot, Trotton, Rogate, Lyffe, and Greatham. The soils of this district are almost as various and diversified as the views and aspects. The high part of the south-west consists of a vast hill of chalk, rising three hundred feet above the village, and is divided into a

sheep-down, the high wood and a long hanging wood, called The Hanger. The covert of this eminence is altogether *beech*, the most lovely of all forest trees, whether we consider its smooth rind or bark, its glossy foliage, or graceful pendulous boughs. The down, or sheep-walk, is a pleasing, park-like spot, of about one mile by half that space, jutting out on the verge of the hill-country, where it begins to break down into the plains, and commanding a very engaging view, being an assemblage of hill, dale, wood-lands, heath, and water. The prospect is bounded to the south-east and east by the vast range of mountains called the Sussex Downs, by Guild-down near Guildford, and by the Downs round Dorking, and Ryegate in Surrey, to the north-east, which altogether, with the country beyond Alton and Farnham, form a noble and extensive outline.

At the foot of this hill, one stage or step from the uplands, lies the village, which consists of one single straggling street, three-quarters of a mile in length, in a sheltered vale, and running parallel with the Hanger. The houses are divided from the hill by a vein of stiff clay (good wheat land), yet stand on a rock of white stone, little in appearance removed from chalk; but seems so far from being calcareous, that it endures extreme heat. Yet that the freestone still preserves somewhat that is analogous to chalk, is plain from the

beeches, which descend as low as those rocks extend, and no farther, and thrive as well on them, where the ground is steep, as on the chalks.

The cart-way of the village divides, in a remarkable manner, two very incongruous soils. To the south-west is a rank clay, that requires the labour of years to render it mellow; while the gardens to the north-east, and small enclosures behind, consist of a warm, forward, crumbling mould, called black malm, which seems highly saturated with vegetable and animal manure; and these may perhaps have been the original site of the town; while the woods and coverts might extend down to the opposite bank.

At each end of the village, which runs from south-east to north-west, arises a small rivulet: that at the north-west end frequently fails; but the other is a fine perennial spring, little influenced by drought or wet seasons, called Well-head. This breaks out of some high grounds joining to Nore Hill, a noble chalk promontory, remarkable for sending forth two streams into two different seas. The one to the south becomes a branch of the Arun, running to Arundel, and so sailing into the British Channel: the other to the north. The Selborne stream makes one branch of the Wey; and, meeting the Black-down stream at Hadleigh, and the Alton and Farnham stream at Tilford-bridge, swells into a considerable river, navigable at Godal-

ming; from whence it passes to Guildford, and so into the Thames at Weybridge; and thus at the Nore into the German Ocean.

Our wells, at an average, run to about sixty-three feet, and when sunk to that depth seldom fail; but produce a fine limpid water, soft to the taste, and much commended by those who drink the pure element, but which does not lather well with soap.

To the north-west, north and east of the village, is a range of fair enclosures, consisting of what is called a white malm, a sort of rotten or rubble stone, which, when turned up to the frost and rain, moulders to pieces, and becomes manure to itself.

Still on to the north-east, and a step lower, is a kind of white land, neither chalk nor clay, neither fit for pasture nor for the plough, yet kindly for hops, which root deep in the freestone, and have their poles and wood for charcoal growing just at hand. The white soil produces the brightest hops.

As the parish still inclines down towards Wolmer Forest, at the juncture of the clays and sand the soil becomes a wet, sandy loam, remarkable for timber, and infamous for roads. The oaks of Temple and Blackmoor stand high in the estimation of purveyors, and have furnished much naval timber; while the trees on the freestone grow large, but are what workmen call shaky, and so brittle as often to fall to pieces in sawing.

Beyond the sandy loam the soil becomes a hungry, lean sand, till it mingles with the forest; and will produce little without the assistance of lime and turnips.

LETTER II.

IN the court of Norton farmhouse, a manor farm to the north-west of the village, on the white malms, stood within these twenty years a broad-leaved elm, or wych hazel, *ulmus folio latissimo scabro* of Ray, which, though it had lost a considerable leading bough in the great storm in the year 1703, equal to a moderate tree, yet, when felled, contained eight loads of timber; and, being too bulky for a carriage, was sawn off at seven feet above the butt, where it measured near eight feet in the diameter. This elm I mention to show to what a bulk planted elms may attain; as this tree must certainly have been such from its situation.

In the centre of the village, and near the church, is a square piece of ground surrounded by houses, and vulgarly called "The Plestor." In the midst of this spot stood, in old times, a vast oak, with a short squat body, and huge horizontal arms extending almost to the extremity of the area. This venerable tree,

surrounded with stone steps, and seats above them, was the delight of old and young, and a place of much resort in summer evenings; where the former sat in grave debate, while the latter frolicked and danced before them. Long might it have stood, had not the amazing tempest in 1703 overturned it at once, to the infinite regret of the inhabitants, and the vicar, who bestowed several pounds in setting it in its place again: but all his care could not avail; the tree sprouted for a time, then withered and died. This oak I mention to show to what a bulk planted oaks also may arrive: and planted this tree must certainly have been, as will appear from what will be said farther concerning this area, when we enter on the antiquities of Selborne.

On the Blackmoor estate there is a small wood called Losel's, of a few acres, that was lately furnished with a set of oaks of a peculiar growth and great value; they were tall and taper-like firs, but standing near together had very small heads, only a little brush without any large limbs. About twenty years ago the bridge at the Toy, near Hampton Court, being much decayed, some trees were wanted for the repairs that were fifty feet long without bough, and would measure twelve inches diameter at the little end. Twenty such trees did a purveyor find in this little wood, with this advantage, that many of them answered the

description at sixty feet. These trees were sold for twenty pounds apiece.

In the centre of this grove there stood an oak, which, though shapely and tall on the whole, bulged out into a large excrescence about the middle of the stem. On this a pair of ravens had fixed their residence for such a series of years, that the oak was distinguished by the title of the Raven Tree. Many were the attempts of the neighbouring youths to get at this eyry: the difficulty whetted their inclinations, and each was ambitious of surmounting the arduous task. But when they arrived at the swelling, it jutted out so in their way, and was so far beyond their grasp, that the most daring lads were awed, and acknowledged the undertaking to be too hazardous: so the ravens built on, nest upon nest, in perfect security, till the fatal day arrived in which the wood was to be levelled. It was in the month of February, when these birds usually sit. The saw was applied to the butt, the wedges were inserted into the opening, the woods echoed to the heavy blow of the beetle or mall or mallet, the tree nodded to its fall; but still the dam sat on. At last, when it gave way, the bird was flung from her nest, and, though her parental affection deserved a better fate, was whipped down by the twigs which brought her dead to the ground.

LETTER III.

THE fossil-shells of this district, and sorts of stone, such as have fallen within my observation, must not be passed over in silence. And first I must mention, as a great curiosity, a specimen that was ploughed up in the chalky fields, near the side of the Down, and given to me for the singularity of its appearance, which, to an incurious eye, seems like a petrified fish of about four inches long, the cardo passing for a head and mouth. It is in reality a bivalve of the Linnæan Genus of *Mytilus*, and the species of *Crista Galli*; called by Lister, *Rastellum*; by Rumphius, *Ostreum plicatum minus*; by D'Argenville, *Auris Porci*, s. *Crista Galli*; and by those who make collections, Cock's Comb. Though I applied to several such in London, I never could meet with an entire specimen; nor could I ever find in books any engraving from a perfect one. In the superb museum at Leicester House, permission was given me to examine for this article; and, though I was disappointed as to the fossil, I was highly gratified with the sight of several of the shells themselves in high preservation. This bivalve is only known to inhabit the Indian Ocean, where it fixes itself to a zoophyte, known by the name *Gorgonia*. The curious foldings of the suture the one into

the other, the alternate flutings or grooves, and the curved form of my specimen, are much easier expressed by the pencil than by words.

Cornua Ammonis are very common about this village. As we were cutting an inclining path up the Hanger, the labourers found them frequently on that steep, just under the soil, in the chalk, and of a considerable size. In the lane above Wall-head, in the way to Emshot, they abound in the bank in a darkish sort of marl, and are usually very small and soft; but in Clay's Pond, a little farther on, at the end of the pit, where the soil is dug out for manure, I have occasionally observed them of large dimensions, perhaps fourteen or sixteen inches in diameter. But as these did not consist of firm stone, but were formed of a kind of terra lapidosa, or hardened clay, as soon as they were exposed to the rains and frost they mouldered away. These seemed as if they were a very recent production. In the chalk-pit, at the north-west end of the Hanger, large nautili are sometimes observed.

In the very thickest strata of our freestone, and at considerable depths, well-diggers often find large scallops or pectines, having both shells deeply striated, and ridged and furrowed alternately. They are highly impregnated with, if not wholly composed of, the stone of the quarry.

LETTER IV.

As in a former letter the freestone of this place has been only mentioned incidentally, I shall here become more particular.

This stone is in great request for hearth-stones, and the beds of ovens; and in lining of lime-kilns it turns to good account, for the workmen use sandy loam instead of mortar, the sand of which fluxes, and runs by the intense heat, and so cases over the whole face of the kiln with a strong vitrified coat-like glass, that it is well preserved from injuries of weather, and endures thirty or forty years. When chiseled smooth, it makes elegant fronts for houses, equal in colour and grain to Bath stone; and superior in one respect, that, when seasoned, it does not scale. Decent chimney-pieces are worked from it of much closer and finer grain than Portland, and rooms are floored with it, but it proves rather too soft for this purpose. It is a freestone cutting in all directions, yet has something of a grain parallel with the horizon, and therefore should not be surbedded, but laid in the same position that it grows in the quarry. On the ground abroad this freestone will not succeed for pavements, because, probably some degrees of saltiness prevailing within it, the rain tears the slabs to pieces. Though this stone is too hard to

be acted on by vinegar, yet both the white part, and even the blue rag, ferments strongly in mineral acids. Though the white stone will not bear wet, yet in every quarry at intervals there are thin strata of blue rag, which resist rain and frost, and are excellent for pitching of stables, paths, and courts, and for building of dry walls against banks, a valuable species of fencing much in use in this village, and for mending of roads. This rag is rugged and stubborn, and will not hew to a smooth face, but is very durable; yet, as these strata are shallow and lie deep, large quantities cannot be procured but at considerable expense. Among the blue rags turn up some blocks tinged with a stain of yellow or rust colour, which seem to be nearly as lasting as the blue; and every now and then balls of a friable substance, like rust of iron, called rust balls.

In Wolmer Forest I see but one sort of stone, called by the workmen sand, or forest-stone. This is generally of the colour of rusty iron, and might probably be worked as iron ore, is very hard and heavy, and of a firm, compact texture, and composed of a small roundish crystalline grit, cemented together by a brown, terrene, ferruginous matter; will not cut without difficulty, nor easily strike fire with steel. Being often found in broad flat pieces, it makes good pavement for paths about houses, never becoming

slippery in frost or rain, is excellent for dry walls, and is sometimes used in buildings. In many parts of that waste it lies scattered on the surface of the ground, but is dug on Weaver's Down, a vast hill on the eastern verge of that forest, where the pits are shallow and the stratum thin. This stone is imperishable.

From a notion of rendering their work the more elegant, and giving it a finish, masons chip this stone into small fragments about the size of the head of a large nail, and then stick the pieces into the wet mortar along the joints of their freestone walls. This embellishment carries an odd appearance, and has occasioned strangers sometimes to ask us pleasantly, "whether we fastened our walls together with tenpenny nails."

LETTER V.

AMONG the singularities of this place the two rocky, hollow lanes, the one to Alton, and the other to the forest, deserve our attention. These roads, running through the malm lands, are, by the traffic of ages, and the fretting of water, worn down through the first stratum of our freestone, and partly through the second; so that they look more like water-courses

than roads ; and are bedded with naked rag for furlongs together. In many places they are reduced sixteen or eighteen feet beneath the level of the fields ; and after floods, and in frosts, exhibit very grotesque and wild appearances, from the tangled roots that are twisted among the strata, and from the torrents rushing down their broken sides ; and especially when those cascades are frozen into icicles, hanging in all the fanciful shapes of frost-work. These rugged, gloomy scenes affright the ladies when they peep down into them from the paths above, and make timid horsemen shudder while they ride along them ; but delight the naturalist with their various botany, and particularly with their curious filices with which they abound.

The manor of Selborne, was it strictly looked after, with all its kindly aspects, and all its sloping coverts, would swarm with game ; even now hares, partridges, and pheasants abound ; and in old days woodcocks were as plentiful. There are few quails, because they more affect open fields than enclosures ; after harvest some few landrails are seen.

The parish of Selborne, by taking in so much of the forest, is a vast district. Those who tread the bounds are employed part of three days in the business, and are of opinion that the outline, in all its curves and indentings, does not comprise less than thirty miles.

The village stands in a sheltered spot, secured by the Hanger from the strong westerly winds. The air is soft, but rather moist from the effluvia of so many trees ; yet perfectly healthy and free from agues.

The quantity of rain that falls on it is very considerable, as may be supposed in so woody and mountainous a district. As my experience of measuring the water is but of short date, I am not qualified to give the mean quantity. I only know that

	Inch.	Hund.
From May 1, 1779, to the end of the year,		
there fell	28	37 !
Jan. 1, 1780, to Jan. 1, 1781	27	32
Jan. 1, 1781, to Jan. 1, 1782	30	71
Jan. 1, 1782, to Jan. 1, 1783	50	26 !
Jan. 1, 1783, to Jan. 1, 1784	33	71
Jan. 1, 1784, to Jan. 1, 1785	33	80
Jan. 1, 1785, to Jan. 1, 1786	31	55
Jan. 1, 1786, to Jan. 1, 1787 ,	39	57

The village of Selborne, and large hamlet of Oak-hanger, with the single farms, and many scattered houses along the verge of the forest, contain upwards of six hundred and seventy inhabitants.

We abound with poor, many of whom are sober and industrious, and live comfortably in good stone or brick cottages, which are glazed, and have chambers above stairs ; mud buildings we have none. Besides

the employment from husbandry, the men work in hop-gardens, of which we have many, and fell and bark timber. In the spring and summer the women weed the corn, and enjoy a second harvest in September by hop-picking. Formerly, in the dead months they availed themselves greatly by spinning wool, for making of barragons, a genteel corded stuff, much in vogue at that time for summer wear, and chiefly manufactured at Alton, a neighbouring town, by some of the people called Quakers; but from circumstances this trade is at an end. The inhabitants enjoy a good share of health and longevity; and the parish swarms with children.

LETTER VI.

SHOULD I omit to describe with some exactness the forest of Wolmer, of which three-fifths perhaps lie in this parish, my account of Selborne would be very imperfect, as it is a district abounding with many curious productions, both animal and vegetable, and has often afforded me much entertainment both as a sportsman and as a naturalist.

The royal forest of Wolmer is a tract of land of about seven miles in length, by two and a half in

breadth, running nearly from north to south, and is abutted on, to begin to the south, and so to proceed eastward, by the parishes of Greatham, Lysse, Rogate, and Trotton, in the county of Sussex; by Bramshot, Hadleigh, and Kingsley. This royalty consists entirely of sand covered with heath and fern, but is somewhat diversified with hills and dales, without having one standing tree in the whole extent. In the bottoms, where the waters stagnate, are many bogs, which formerly abounded with subterraneous trees, though Dr. Plot says positively, that "there never were any fallen trees hidden in the mosses of the southern counties." But he was mistaken: for I myself have seen cottages on the verge of this wild district, whose timbers consisted of a black hard wood, looking like oak, which the owners assured me they procured from the bogs by probing the soil with spits, or some such instruments: but the peat is so much cut out, and the moors have been so well examined, that none has been found of late. Besides the oak, I have also been shown pieces of fossil wood of a paler colour, and softer nature, which the inhabitants called fir: but, upon a nice examination, and trial by fire, I could discover nothing resinous in them, and therefore rather suppose that they were parts of a willow or alder, or some such aquatic tree.

This lonely domain is a very agreeable haunt for

many sorts of wild fowls, which not only frequent it in the winter, but breed there in the summer: such as lapwings, snipes, wild ducks, and, as I have discovered within these few years, teals. Partridges in vast plenty are bred in good seasons on the verge of this forest, into which they love to make excursions; and in particular, in the dry summers of 1740 and 1741, and some years after, they swarmed to such a degree that parties of unreasonable sportsmen killed twenty and sometimes thirty brace in a day.

But there was a nobler species of game in this forest, now extinct, which I have heard old people say abounded much before shooting flying became so common, and that was the heath-cock, black-game, or grouse. When I was a little boy I recollect one coming now and then to my father's table. The last pack remembered was killed about thirty-five years ago; and within these ten years one solitary greyhen was sprung by some beagles in beating for a hare. The sportsmen cried out, "A hen pheasant!" but a gentleman present, who had often seen grouse in the north of England, assured me that it was a greyhen.

Nor does the loss of our black game prove the only gap in the Fauna Selborniensis; for another beautiful link in the chain of beings is wanting. I mean the red deer, which toward the beginning of this century amounted to about five hundred head, and made a

stately appearance. There is an old keeper, now alive, named Adams, whose great grandfather (mentioned in a perambulation taken in 1635), grandfather, father, and self, enjoyed the head keepership of Wolmer Forest in succession for more than a hundred years. This person assures me, that his father has often told him that Queen Anne, as she was journeying on the Portsmouth road, did not think the forest of Wolmer beneath her royal regard. For she came out of the great road at Lippock, which is just by, and, reposing herself on a bank smoothed for that purpose, lying about half a mile to the east of Wolmer Pond, and still called Queen's Bank, saw with great complacency and satisfaction the whole herd of red deer brought by the keepers along the vale before her, consisting then of about five hundred head. A sight this, worthy the attention of the greatest sovereign! But he farther adds that, by means of the Waltham blacks, or, to use his own expression, as soon as they began blacking, they were reduced to about fifty head, and so continued decreasing till the time of the late Duke of Cumberland. It is now more than thirty years ago that His Highness sent down a huntsman, and six yoeman-prickers, in scarlet jackets laced with gold, attended by the staghounds, ordering them to take every deer in this forest alive, and to convey them in carts to Windsor. In the course of the summer they

caught every stag, some of which showed extraordinary diversion; but in the following winter, when the hinds were also carried off, such fine chases were exhibited as served the country people for matter of talk and wonder for years afterwards. I saw myself one of the yeoman-prickers single out a stag from the herd, and must confess that it was the most curious feat of activity I ever beheld, superior to anything in Mr. Astley's riding-school. The exertions made by the horse and deer much exceeded all my expectations, though the former greatly excelled the latter in speed. When the devoted deer was separated from his companions, they gave him, by their watches, law, as they called it, for twenty minutes; when, sounding their horns, the stop-dogs were permitted to pursue, and a most gallant scene ensued.

LETTER VII.

THOUGH large herds of deer do much harm to the neighbourhood, yet the injury to the morals of the people is of more moment than the loss of their crops. The temptation is irresistible; for most men are sportsmen by constitution: and there is such an inherent spirit for hunting in human nature, as scarce

any inhibitions can restrain. Hence, towards the beginning of this century all this country was wild about deer-stealing. Unless he was a hunter, as they affected to call themselves, no young person was allowed to be possessed of manhood or gallantry. The Waltham blacks at length committed such enormities, that Government was forced to interfere with that severe and sanguinary act called the "Black Act," which now comprehends more felonies than any law that ever was framed before. And, therefore, a late Bishop of Winchester, when urged to re-stock Waltham Chase, refused, from a motive worthy of a prelate, replying "that it had done mischief enough already."

Our old race of deer-stealers is hardly extinct yet: it was but a little while ago that, over their ale, they used to recount the exploits of their youth; such as watching the pregnant hind to her lair, and, when the calf was dropped, paring its feet with a penknife to the quick to prevent its escape, till it was large and fat enough to be killed; the shooting at one of their neighbours with a bullet in a turnip-field by moon-shine, mistaking him for a deer; and the losing a dog in the following extraordinary manner: Some fellows, suspecting that a calf new-fallen was deposited in a certain spot of thick fern, went, with a lurcher, to surprise it; when the parent-hind rushed out of the brake, and, taking a vast spring with all her feet close

together, pitched upon the neck of the dog, and broke it short in two.

Another temptation to idleness and sporting was a number of rabbits, which possessed all the hillocks and dry places: but these being inconvenient to the huntsmen, on account of their burrows, when they came to take away the deer, they permitted the country people to destroy them all.

Such forests and wastes, when their allurements to irregularities are removed, are of considerable service to neighbourhoods that verge upon them, by furnishing them with peat and turf for their firing; with fuel for the burning their lime; and with ashes for their grasses; and by maintaining their geese and their stock of young cattle at little or no expense.

The manor farm of the parish of Greatham has an admitted claim, I see (by an old record taken from the Tower of London) of turning all live stock on the forest, at proper seasons, "*bidentibus exceptis*." The reason, I presume, why sheep are excluded, is because, being such close grazers, they would pick out all the finest grasses, and hinder the deer from thriving.

Though (by statute 4 and 5 W. and Mary, c. 23) "to burn on any waste, between Candlemas and Midsummer, any grig, ling, heath and furze, goss or fern, is punishable with whipping and confinement in the house of correction;" yet, in this forest, about

March or April, according to the dryness of the season, such vast heath-fires are lighted up, that they often get to a masterless head, and, catching the hedges, have sometimes been communicated to the underwoods, woods, and coppices, where great damage has ensued. The plea for these burnings is that, when the old coat of heath, etc., is consumed, young will sprout up, and afford much tender browse for cattle; but, where there is large old furze, the fire, following the roots, consumes the very ground; so that for hundreds of acres nothing is to be seen but smother and desolation, the whole circuit round looking like the cinders of a volcano; and, the soil being quite exhausted, no traces of vegetation are to be found for years. These conflagrations, as they take place usually with a north-east or east wind, much annoy this village with their smoke, and often alarm the country; and, once in particular, I remember that a gentleman, who lives beyond Andover, coming to my house, when he got on the downs between that town and Winchester, at twenty-five miles' distance, was surprised much with smoke and a hot smell of fire, and concluded that Alresford was in flames; but, when he came to that town, he then had apprehensions for the next village, and so on to the end of his journey.

On two of the most conspicuous eminences of this forest stand two arbours or bowers, made of the

boughs of oak; the one called Waldon Lodge, the other Brimstone Lodge: these the keepers renew annually on the feast of St. Barnabas, taking the old materials for a perquisite. The farm called Blackmoor, in this parish, is obliged to find the posts and brush-wood for the former; while the farms at Greatham, in rotation, furnish for the latter, and are all enjoined to cut and deliver the materials at the spot. This custom I mention, because I look upon it to be of very remote antiquity.

LETTER VIII.

ON the verge of the forest, as it is now circumscribed, are three considerable lakes, two in Oakhanger, of which I have nothing particular to say; and one called Bin's, or Bean's Pond, which is worthy the attention of a naturalist or a sportsman. For, being crowded at the upper end with willows, and with the *carex cespitosa*, it affords such a safe and pleasing shelter to wild ducks, teals, snipes, etc., that they breed there. In the winter this covert is also frequented by foxes, and sometimes by pheasants; and the bogs produce many curious plants. (For which consult Letter XLI. to Mr. Barrington.)

By a perambulation of Wolmer Forest and the Holt, made in 1635, and the eleventh year of Charles I. (which now lies before me), it appears that the limits of the former are much circumscribed. For, to say nothing of the farther side, with which I am not so well acquainted, the bounds on this side, in old times, came into Binswood, and extended to the ditch of Ward le Ham Park, in which stands the curious mount called King John's Hill, and Lodge Hill; and to the verge of Hartley Mauduit, called Mauduit Hatch; comprehending also Short Heath, Oakhanger, and Oakwoods—a large district, now private property, though once belonging to the royal domain.

It is remarkable that the term *purlieu* is never once mentioned in this long roll of parchment. It contains, besides the perambulation, a rough estimate of the value of the timbers, which were considerable, growing at that time in the district of the Holt, and enumerates the officers, superior and inferior, of those joint forests, for the time being, and their ostensible fees and perquisites. In those days, as at present, there were hardly any trees in Wolmer Forest.

Within the present limits of the forest are three considerable lakes, Hogmer, Cranmer, and Wolmer, all of which are stocked with carp, tench, eels, and perch: but the fish do not thrive well, because the water is hungry, and the bottoms are a naked sand.

A circumstance respecting these ponds, though by no means peculiar to them, I cannot pass over in silence; and that is, that instinct by which in summer all the kine, whether oxen, cows, calves, or heifers, retire constantly to the water during the hotter hours; where, being more exempt from flies, and inhaling the coolness of that element, some belly deep, and some only to mid-leg, they ruminate and solace themselves from about ten in the morning till four in the afternoon, and then return to their feeding. During this great proportion of the day they drop much dung, in which insects nestle, and so supply food for the fish, which would be poorly subsisted but from this contingency. Thus Nature, who is a great economist, converts the recreation of one animal to the support of another! Thomson, who was a nice observer of natural occurrences, did not let this pleasing circumstance escape him. He says, in his "Summer,"

"A various group the herds and flocks compose;
 ————— on the grassy bank
 Some ruminating lie; while others stand
 Half in the flood, and, often bending, sip
 The circling surface."

Wolmer Pond, so called, I suppose, for eminence sake, is a vast lake for this part of the world, containing, in its whole circumference, 2,646 yards, or very near a mile and a half. The length of the north-west

and opposite side is about 704 yards, and the breadth of the south-west end about 456 yards. This measurement, which I caused to be made with good exactness, gives an area of about sixty-six acres, exclusive of a large irregular arm at the north-east corner, which we did not take into the reckoning.

On the face of this expanse of waters, and perfectly secure from fowlers, lie all day long, in the winter season, vast flocks of ducks, teals, and widgeons, of various denominations, where they preen and solace, and rest themselves, till towards sunset, when they issue forth in little parties (for in their natural state they are all birds of the night) to feed in the brooks and meadows, returning again with the dawn of the morning. Had this lake an arm or two more, and were it planted round with thick covert (for now it is perfectly naked), it might make a valuable decoy.

Yet neither its extent, nor the clearness of its water, nor the resort of various and curious fowls, nor its picturesque groups of cattle, can render this mere so remarkable as the great quantity of coins that were found in its bed about forty years ago. But, as such discoveries more properly belong to the antiquities of this place, I shall suppress all particulars for the present, till I enter professedly on my series of letters respecting the more remote history of this village and district.

LETTER IX.

By way of supplement, I shall trouble you once more on this subject, to inform you that Wolmer, with her sister forest Ayles Holt, *alias* Alice Holt, as it is called in old records, is held by grant from the crown for a term of years.

The grantees that the author remembers are Brigadier-General Emanuel Scroope Howe, and his lady, Ruperta, who was a natural daughter of Prince Rupert by Margaret Hughes; a Mr. Mordaunt, of the Peterborough family, who married a dowager Lady Pembroke; Henry Bilson Legge and lady; and now Lord Stawell, their son.

The lady of General Howe lived to an advanced age, long surviving her husband, and, at her death, left behind her many curious pieces of mechanism of her father's constructing, who was a distinguished mechanic and artist, as well as warrior; and among the rest, a very complicated clock, lately in possession of Mr. Elmer, the celebrated game painter at Farnham, in the county of Surrey.

Though these two forests are only parted by a narrow range of enclosures, yet no two soils can be more different; for the Holt consists of a strong loam, of a miry nature, carrying a good turf, and abounding

with oaks that grow to be large timber; while Wolmer is nothing but a hungry, sandy, barren waste.

The former being all in the parish of Binsted, is about two miles in extent from north to south, and near as much from east to west, and contains within it many woodlands and lawns, and the great lodge where the grantees reside, and a smaller lodge called Goose Green; and is abutted on by the parishes of Kingsley, Frinsham, Farnham, and Bentley; all of which have right of common.

One thing is remarkable, that though the Holt has been of old well stocked with fallow-deer, unrestrained by any pales or fences more than a common hedge, yet they were never seen within the limits of Wolmer; nor were the red deer of Wolmer ever known to haunt the thickets or glades of the Holt.

At present the deer of the Holt are much thinned and reduced by the night hunters, who perpetually harass them in spite of the efforts of numerous keepers, and the severe penalties that have been put in force against them as often as they have been detected, and rendered liable to the lash of the law. Neither fines nor imprisonments can deter them, so impossible is it to extinguish the spirit of sporting which seems to be inherent in human nature.

General Howe turned out some German wild boars and sows in his forests, to the great terror of the

neighbourhood, and, at one time, a wild bull or buffalo; but the country rose upon them and destroyed them.

A very large fall of timber, consisting of about one thousand oaks, has been cut this spring (viz., 1784) in the Holt forest: one fifth of which, it is said, belongs to the grantee, Lord Stawell. He lays claim also to the lop and top; but the poor of the parishes of Binsted and Frinsham, Bentley and Kingsley, assert that it belongs to them, and assembling in a riotous manner, have actually taken it all away. One man, who keeps a team, has carried home for his share forty stacks of wood. Forty-five of these people his lordship has served with actions. These trees, which were very sound and in high perfection, were winter-cut, viz., in February and March, before the bark would run. In old times the Holt was estimated to be eighteen miles, computed measure from water-carriage, viz., from the town of Chertsey, on the Thames; but now it is not half that distance, since the Wey is made navigable up to the town of Godalming, in the county of Surrey.

LETTER X.

August 4th, 1767.

It has been my misfortune never to have had any neighbours whose studies have led them towards the pursuit of natural knowledge; so that, for want of a companion to quicken my industry and sharpen my attention, I have made but slender progress in a kind of information to which I have been attached from my childhood.

As to swallows (*hirundines rusticae*) being found in a torpid state during the winter in the Isle of Wight or any part of this country, I never heard any such account worth attending to. But a clergyman, of an inquisitive turn, assures me, that when he was a great boy, some workmen, in pulling down the battlements of a church tower early in the spring, found two or three swifts (*hirundines apodes*) among the rubbish, which were at first appearance dead, but on being carried towards the fire revived. He told me, that out of his great care to preserve them, he put them in a paper bag, and hung them by the kitchen fire, where they were suffocated.

Another intelligent person has informed me, that while he was a schoolboy at Brighthelmstone, in Sussex, a great fragment of the chalk cliff fell down one stormy

winter on the beach, and that many people found swallows among the rubbish; but on my questioning him whether he saw any of those birds himself, to my no small disappointment, he answered me in the negative; but that others assured him they did.

Young broods of swallows began to appear this year on July 11th, and young martins (*hirundines urbicæ*) were then fledged in their nests. Both species will breed again once. For I see by my fauna of last year, that young broods came forth so late as September 18th. Are not these late hatchings more in favour of hiding than migration? Nay, some young martins remained in their nests last year so late as September 29th; and yet they totally disappeared with us by the 5th October.

How strange it is that the swift, which seems to live exactly the same life with the swallow and house-martin, should leave us before the middle of August invariably! while the latter stay often till the middle of October; and once I saw numbers of house-martins on the 7th November. The martins and red-wing fieldfares were flying in sight together, an uncommon assemblage of summer and winter birds!

A little yellow bird (it is either a species of the *alauda trivialis*, or rather perhaps of the *motacilla trochilus*) still continues to make a sibilous shivering noise in the tops of tall woods. The stoparola of Ray (for which

we have as yet no name in these parts) is called in your zoology the fly-catcher. There is one circumstance characteristic of this bird which seems to have escaped observation, and that is, it takes its stand on the top of some stake or post, from whence it springs forth on its prey, catching a fly in the air, and hardly ever touching the ground, but returning still to the same stand for many times together.

I perceive there are more than one species of the *motacilla trochilus*. Mr. Derham supposes, in "Ray's Philos. Letters," that he has discovered three. In these there is again an instance of some very common birds that have as yet no English name.

Mr. Stillingfleet makes a question whether the black-cap (*motacilla atricapilla*) be a bird of passage or not: I think there is no doubt of it: for, in April, in the first fine weather, they come trooping, all at once, into these parts, but are never seen in the winter. They are delicate songsters.

Numbers of snipes breed every summer in some moory ground on the verge of this parish. It is very amusing to see the cock bird on wing at that time, and to hear his piping and humming notes.

I have had no opportunity yet of procuring any of those mice which I mentioned to you in town. The person that brought me the last says they are plenty in harvest, at which time I will take care to get more;

and will endeavour to put the matter out of doubt whether it be a nondescript species or not.

I suspect much there may be two species of water-rats. Ray says, and Linnæus after him, that the water-rat is web-footed behind. Now I have discovered a rat on the banks of our little stream that is not web-footed, and yet is an excellent swimmer and diver: it answers exactly to the *mus amphibius* of Linnæus (see *Syst. Nat.*), which he says "*natat in fossis et urinatur.*" I should be glad to procure one "*plantis palmatis.*" Linnæus seems to be in a puzzle about his *mus amphibius*, and to doubt whether it differs from his *mus terrestris*; which if it be, as he allows, the "*mus agræstis capite grandi brachyuros,*" of Ray, is widely different from the water-rat, both in size, make, and manner of life.

As to the *falco*, which I mentioned in town, I shall take the liberty to send it down to you into Wales; presuming on your candour that you will excuse me if it should appear as familiar to you as it is strange to me. Though mutilated "*qualem dices . . . ante hac fuisse tales cum sint reliquæ!*"

It haunted a marshy piece of ground in quest of wild-ducks and snipes; but, when it was shot, had just knocked down a rook, which it was tearing in pieces. I cannot make it answer to any of our English hawks; neither could I find any like it at the curious exhibition of stuffed birds in Spring Gardens. I found it nailed

up at the end of a barn, which is the countryman's museum.

The parish I live in is a very abrupt, uneven country, full of hills and woods, and therefore full of birds.

LETTER XI.

SELBORNE, *September 9th*, 1767.

It will not be without impatience that I shall wait for your thoughts with regard to the *falco* ; as to its weight, breadth, etc., I wish I had set them down at the time ; but, to the best of my remembrance, it weighed two pounds and eight ounces, and measured, from wing to wing, thirty-eight inches. Its cere and feet were yellow, and the circle of its eyelids a bright yellow. As it had been killed some days, and the eyes were sunk, I could make no good observation on the colour of the pupils and the irides.

The most unusual birds I ever observed in these parts were a pair of hoopoes (*upupa*), which came several years ago in the summer, and frequented an ornamented piece of ground, which joins to my garden, for some weeks. They used to march about in a stately manner, feeding in the walks, many times in the day ; and seemed disposed to breed in my outlet ;

but were frightened and persecuted by idle boys, who would never let them be at rest.

Three grossbeaks (*loxia coccothraustes*) appeared some years ago in my fields, in the winter; one of which I shot. Since that, now and then, one is occasionally seen in the same dead season.

A crossbill (*loxia curvirostra*) was killed last year in this neighbourhood.

Our streams, which are small, and rise only at the end of the village, yield nothing but the bull's head or miller's thumb (*gobius fluviatilis capitatus*), the trout (*trutta fluviatilis*), the eel (*anguilla*), the lamp-fern (*lampætra parva et fluviatilis*), and the stickle-back (*pisciculus aculeatus*).

We are twenty miles from the sea, and almost as many from a great river, and therefore see but little of sea birds. As to wild fowls, we have a few teems of ducks bred in the moors where the snipes breed; and multitudes of widgeons and teals in hard weather frequent our lakes in the forest.

Having some acquaintance with the tame brown owl, I find that it casts up the fur of mice, and the feathers, of birds in pellets, after the manner of hawks: when full, like a dog, it hides what it cannot eat.

The young of the barn-owl are not easily raised, as they want a constant supply of fresh mice; whereas the young of the brown owl will eat indiscriminately

all that is brought : snails, rats, kittens, puppies, magpies, and any kind of carrion or offal.

The house-martins have eggs still, and squab young. The last swift I observed was about the 21st August ; it was a straggler.

Red-starts, fly-catchers, white-throats, and *reguli non cristati*, still appear ; but I have seen no black-caps lately.

I forgot to mention that I once saw, in Christ Church College quadrangle in Oxford, on a very sunny warm morning, a house-martin flying about, and settling on the parapet, so late as the 20th November.

At present I know only two species of bats, the common *vespertilio murinus* and the *vespertilio auribus*.

I was much entertained last summer with a tame bat, which would take flies out of a person's hand. If you gave it anything to eat, it brought its wings round before the mouth, hovering and hiding its head in the manner of birds of prey when they feed. The adroitness it showed in shearing off the wings of the flies, which were always rejected, was worthy of observation, and pleased me much. Insects seemed to be most acceptable, though it did not refuse raw flesh when offered ; so that the notion, that bats go down chimneys and gnaw men's bacon, seems no improbable story. While I amused myself with this wonderful quad-

rupe, I saw it several times confute the vulgar opinion, that bats when down upon a flat surface cannot get on the wing again, by rising with great ease from the floor. It ran, I observed, with more despatch than I was aware of, but in a most ridiculous and grotesque manner.

Bats drink on the wing, like swallows, by sipping the surface as they play over pools and streams. They love to frequent waters, not only for the sake of drinking, but on account of insects, which are found over them in the greatest plenty. As I was going some years ago, pretty late, in a boat from Richmond to Sunbury, on a warm summer's evening, I think I saw myriads of bats between the two places. The air swarmed with them all along the Thames, so that hundreds were in sight at a time. I am, etc.

LETTER XII.

November 4th, 1767.

SIR,—It gave me no small satisfaction to hear that the *falco* turned out an uncommon one. I must confess I should have been better pleased to have heard that I had sent you a bird that you had never seen before; but that, I find, would be a difficult task.

I have procured some of the mice mentioned in my former letters, a young one and a female with young, both of which I have preserved in brandy. From the colour, shape, size, and manner of nesting, I make no doubt but that the species is nondescript. They are much smaller, and more slender, than the *mus domesticus medius* of Ray, and have more of the squirrel or dormouse colour; their belly is white, a straight line along their sides divides the shades of their back and belly. They never enter into houses; are carried into ricks and barns with the sheaves, abound in harvest; and build their nests amidst the straws of the corn above the ground, and sometimes in thistles. They breed as many as eight at a litter, in a little round nest composed of the blades of grass or wheat.

One of these nests I procured this autumn, most artificially platted, and composed of the blades of wheat, perfectly round, and about the size of a cricket ball, with the aperture so ingeniously closed, that there was no discovering to what part it belonged. It was so compact and well filled, that it would roll across the table without being discomposed, though it contained eight little mice that were naked and blind. As this nest was perfectly full, how could the dam come at her litter respectively, so as to administer a teat to each? Perhaps she opens different places for that purpose, adjusting them again when the business

is over; but she could not possibly be contained herself in the ball with her young, which moreover would be daily increasing in bulk. This wonderful procreant cradle, an elegant instance of the efforts of instinct, was found in a wheat-field suspended in the head of a thistle.

A gentleman, curious in birds, wrote me word that his servant had shot one last January, in that severe weather, which he believed would puzzle me. I called to see it this summer, not knowing what to expect, but the moment I took it in hand I pronounced it the male *garrulus bohemicus* or German silk-tail, from the five peculiar crimson tags or points which it carries at the ends of five of the short remiges. It cannot, I suppose, with any propriety, be called an English bird, and yet I see, by Ray's "Philosophical Letters," that great flocks of them, feeding on haws, appeared in this kingdom in the winter of 1685.

The mention of haws puts me in mind that there is a total failure of that wild fruit, so conducive to the support of many of the winged nation. For the same severe weather, late in the spring, which cut off all the produce of the more tender and curious trees, destroyed also that of the more hardy and common.

Some birds, haunting with the missel-thrushes, and feeding on the berries of the yew tree, which answered to the description of the *merula torquata*, or

ring-ouzel, were lately seen in this neighbourhood. I employed some people to procure me a specimen, but without success. (See Letter VIII.)

Query.—Might not canary birds be naturalised to this climate, provided their eggs were put, in the spring, into the nests of some of their congeners, as goldfinches, greenfinches, etc? Before winter perhaps they might be hardened, and able to shift for themselves.

About ten years ago I used to spend some weeks yearly at Sunbury, which is one of those pleasant villages lying on the Thames, near Hampton Court. In the autumn, I could not help being much amused with those myriads of the swallow kind which assemble in those parts. But what struck me most was, that, from the time they began to congregate, forsaking the chimneys and houses, they roosted every night in the osier-beds of the aits of that river. Now, this resorting towards that element, at that season of the year, seems to give some countenance to the northern opinion (strange as it is) of their retiring under water. A Swedish naturalist is so much persuaded of that fact, that he talks, in his calendar of Flora, as familiarly of the swallows going under water in the beginning of September, as he would of his poultry going to roost a little before sunset.

An observing gentleman in London writes me word that he saw a house-martin, on the twenty-third of last

October, flying in and out of its nest in the Borough. And I myself, on the twenty-ninth of last October (as I was travelling through Oxford), saw four or five swallows hovering round and settling on the roof of the county hospital.

Now is it likely that these poor little birds (which perhaps had not been hatched but a few weeks) should, at that late season of the year, and from so midland a county, attempt a voyage to Goree or Senegal, almost as far as the equator?

I acquiesce entirely in your opinion—that, though most of the swallow kind may migrate, yet that some do stay behind and hide with us during the winter.

As to the short-winged, soft-billed birds, which come trooping in such numbers in the spring, I am at a loss even what to suspect about them. I watched them narrowly this year, and saw them abound till about Michaelmas, when they appeared no longer. Subsist they cannot openly among us, and yet elude the eyes of the inquisitive; and, as to their hiding, no man pretends to have found any of them in a torpid state in the winter. But with regard to their migration, what difficulties attend that supposition! that such feeble bad fliers (who the summer long never flit but from hedge to hedge) should be able to traverse vast seas and continents in order to enjoy milder seasons amidst the regions of Africa!

LETTER XIII.

SELBORNE, *Jan. 22nd, 1768.*

SIR,—As in one of your former letters you expressed the more satisfaction from my correspondence on account of my living in the most southerly county, so now I may return the compliment, and expect to have my curiosity gratified by your living much more to the North.

For many years past I have observed that towards Christmas vast flocks of chaffinches have appeared in the fields; many more, I used to think, than could be hatched in any one neighbourhood. But, when I came to observe them more narrowly, I was amazed to find that they seemed to me to be almost all hens. I communicated my suspicions to some intelligent neighbours, who, after taking pains about the matter, declared that they also thought them mostly females—at least fifty to one. This extraordinary occurrence brought to my mind the remark of Linnæus, that “before winter all their hen chaffinches migrate through Holland into Italy.” Now I want to know, from some curious person in the north, whether there are any large flocks of these finches with them in the winter, and of which sex they mostly consist? For from such intelligence, one might be able to judge whether our

female flocks migrate from the other end of the island, or whether they come over to us from the continent.

We have, in the winter, vast flocks of the common linnets; more, I think, than can be bred in any one district. These, I observe, when the spring advances, assemble on some tree in the sunshine, and join all in a gentle sort of chirping, as if they were about to break up their winter quarters and betake themselves to their proper summer homes. It is well known, at least, that the swallows and the fieldfares do congregate with a gentle twittering before they make their respective departure.

You may depend on it that the bunting, *Emberiza miliaria*, does not leave this county in the winter. In January, 1767, I saw several dozen of them, in the midst of a severe frost, among the bushes on the downs near Andover: in our woodland-enclosed district it is a rare bird.

Wagtails, both white and yellow, are with us all the winter. Quails crowd to our southern coast, and are often killed in numbers by people that go on purpose.

Mr. Stillingfleet, in his Tracts, says that "if the wheatear (*ænanthe*) does not quit England, it certainly shifts places; for about harvest they are not to be found, where there was before great plenty of them." This well accounts for the vast quantities that are caught about that time on the south downs near Lewes,

where they are esteemed a delicacy. There have been shepherds, I have been credibly informed, that have made many pounds in a season by catching them in traps. And though such multitudes are taken, I never saw (and I am well acquainted with those parts) above two or three at a time, for they are never gregarious. They may perhaps migrate in general, and, for that purpose, draw towards the coast of Sussex in autumn : but that they do not all withdraw I am sure, because I see a few stragglers in many counties, at all times of the year, especially about warrens and stone quarries.

I have no acquaintance, at present, among the gentlemen of the navy; but have written to a friend, who was a sea-chaplain in the late war, desiring him to look into his minutes, with respect to birds that settled on their rigging during their voyage up or down the Channel. What Hasselquist says on that subject is remarkable; there were little short-winged birds frequently coming on board his ship all the way from our channel quite up to the Levant, especially before squally weather.

What you suggest, with regard to Spain, is highly probable. The winters of Andalusia are so mild, that, in all likelihood, the soft-billed birds that leave us at that season may find insects sufficient to support them there.

Some young man, possessed of fortune, health, and

leisure, should make an autumnal voyage into that kingdom, and should spend a year there, investigating the natural history of that vast country. Mr. Willughby passed through that kingdom on such an errand; but he seems to have skirted along in a superficial manner and an ill-humour, being much disgusted at the rude dissolute manners of the people.

I have no friend left now at Sunbury to apply to about the swallows roosting on the aits of the Thames: nor can I hear any more about those birds which I suspected were *Merulæ torquatae*.

As to the small mice, I have farther to remark, that though they hang their nests for breeding up amidst the straws of the standing corn, above the ground, yet I find that, in the winter, they burrow deep in the earth, and make warm beds of grass: but their grand rendezvous seems to be in corn-ricks, into which they are carried at harvest. A neighbour housed an oat-rick lately, under the thatch of which were assembled nearly a hundred, most of which were taken, and some I saw. I measured them, and found that, from nose to tail, they were just two inches and a quarter, and their tails just two inches long. Two of them, in a scale, weighed down just one copper halfpenny, which is about the third of an ounce avoirdupois: so that I suppose they are the smallest quadrupeds in this island. A full-grown *Mus medius domesticus* weighs, I find,

one ounce lumping weight, which is more than six times as much as the mouse above; and measures from nose to rump four inches and a quarter, and the same in its tail. We have had a very severe frost and deep snow this month. My thermometer was one day fourteen degrees and a half below the freezing-point, within doors. The tender evergreens were injured pretty much. It was very providential that the air was still, and the ground well covered with snow, else vegetation in general must have suffered prodigiously. There is reason to believe that some days were more severe than any since the year 1739-40.

I am, etc., etc.

LETTER XIV.

SELBORNE, *March 12th*, 1768.

DEAR SIR,—If some curious gentleman would procure the head of a fallow-deer, and have it dissected, he would find it furnished with two spiracula, or breathing places, besides the nostrils; probably analogous to the *puncta lachrymalia* in the human head. When deer are thirsty they plunge their noses, like some horses, very deep under water, while in the act of drinking, and continue them in that situation for a

considerable time: but, to obviate any inconveniency, they can open two vents, one at the inner corner of each eye, having a communication with the nose. Here seems to be an extraordinary provision of nature worthy our attention, and which has not, that I know of, been noticed by any naturalist. For it looks as if these creatures would not be suffocated, though both their mouths and nostrils were stopped. This curious formation of the head may be of singular service to beasts of chase, by affording them free respiration: and no doubt these additional nostrils are thrown open when they are hard run. Mr. Ray observed that at Malta the owners slit up the nostrils of such asses as were hard worked: for they, being naturally straight or small, did not admit air sufficient to serve them when they travelled, or laboured, in that hot climate. And we know that grooms, and gentlemen of the turf, think large nostrils necessary, and a perfection, in hunters and running horses.

Oppian, the Greek poet, by the following line, seems to have had some notion that stags have four spiracula:

“Τετραδύμοι ῥίνες, πίσυρες πνοιασὶ διαυλοί.”

“Quadrifidæ nares, quadruplices ad respirationem canales.”

OPP. CYN. Lib. ii. l. 181.

Writers, copying from one another, make Aristotle say that goats breathe at their ears: whereas he asserts

just the contrary : “*Ἀλκμαίων γὰρ οὐκ ἀληθῆ λέγει, φάμενος ἀναπνεῖν τὰς αἰγὰς κατὰ τὰ ὦτα.*” “*Alcmæon does not advance what is true, when he avers that goats breathe through their ears.*”—“*History of Animals.*” Book I., chap xi.

LETTER XV.

SELBORNE, *March 30th, 1768.*

DEAR SIR,—Some intelligent country people have a notion that we have in these parts a species of the *genus mustelinum*, besides the weasel, stoat, ferret, and polecat; a little reddish beast, not much bigger than a field-mouse, but much longer, which they call a *cane*. This piece of intelligence can be little depended on; but farther inquiry may be made.

A gentleman in this neighbourhood had two milk-white rooks in one nest. A booby of a carter, finding them before they were able to fly, threw them down and destroyed them, to the regret of the owner, who would have been glad to have preserved such a curiosity in his rookery. I saw the birds myself nailed against the end of a barn, and was surprised to find that their bills, legs, feet, and claws were milk-white.

A shepherd saw, as he thought, some white larks on

a down above my house this winter: were not these the *Emberiza nivalis*, the snow-flake of the Brit. Zool.? No doubt they were.

A few years ago I saw a cock bullfinch in a cage, which had been caught in the fields after it was come to its full colours. In about a year it began to look dingy; and, blackening every succeeding year, it became coal-black at the end of four. Its chief food was hempseed. Such influence has food on the colour of animals! The pied and mottled colours of domesticated animals are supposed to be owing to high, various, and unusual food.

I had remarked, for years, that the root of the cuckoo-pint (*arum*) was frequently scratched out of the dry banks of hedges, and eaten in severe snowy weather. After observing, with some exactness, myself, and getting others to do the same, we found it was the thrush kind that searched it out. The root of the *arum* is remarkably warm and pungent.

Our flocks of female chaffinches have not yet forsaken us. The blackbirds and thrushes are very much thinned down by that fierce weather in January.

In the middle of February I discovered, in my tall hedges, a little bird that raised my curiosity: it was of that yellow-green colour that belongs to the *salicaria* kind, and, I think, was soft-billed. It was no *parus*; and was too long and too big for the golden-crowned

wren, appearing most like the largest willow-wren. It hung sometimes with its back downwards, but never continuing one moment in the same place. I shot at it, but it was so desultory that I missed my aim.

I wonder that the stone-curlew, *Charadrius ædicnemus*, should be mentioned by the writers as a rare bird: it abounds in all the champaign parts of Hampshire and Sussex, and breeds, I think, all the summer, having young ones, I know, very late in the autumn. Already they begin clamouring in the evening. They cannot, I think, with any propriety, be called, as they are by Mr. Ray, "*circa aquas versantes*;" for with us, by day at least, they haunt only the most dry, open, upland fields and sheep-walks, far removed from water: what they may do in the night I cannot say. Worms are their usual food, but they also eat toads and frogs.

I can show you some good specimens of my new mice. Linnæus perhaps would call the species *Mus minimus*.

LETTER XVI.

SELBORNE, April 18th, 1768.

DEAR SIR,—The history of the stone-curlew, *Charadrius ædicnemus*, is as follows. It lays its eggs,

usually two, never more than three, on the bare ground, without any nest, in the field, so that the countryman, in stirring his fallows, often destroys them. The young run immediately from the egg like partridges, etc., and are withdrawn to some flinty field by the dam, where they skulk among the stones, which are their best security; for their feathers are so exactly of the colour of our grey-spotted flints, that the most exact observer, unless he catches the eye of the young bird, may be eluded. The eggs are short and round; of a dirty white, spotted with dark bloody blotches. Though I might not be able, just when I pleased, to procure you a bird, yet I could show you them almost any day; and any evening you may hear them round the village, for they make a clamour which may be heard a mile. *Edicnemus* is a most apt and expressive name for them, since their legs seem swollen like those of a gouty man. After harvest I have shot them before the pointers in turnip-fields.

I make no doubt but there are three species of the willow-wrens; two I know perfectly, but have not been able yet to procure the third. No two birds can differ more in their notes, and that constantly, than those two that I am acquainted with; for the one has a joyous, easy, laughing note, the other a harsh, loud chirp. The former is every way larger, and three-quarters of an inch longer, and weighs two drams and

a half, while the latter weighs but two ; so the songster is one-fifth heavier than the chirper. The chirper (being the first summer-bird of passage that is heard, the wryneck sometimes excepted) begins his two notes in the middle of March, and continues them through the spring and summer till the end of August, as appears by my journals. The legs of the larger of these two are flesh-coloured ; of the less black.

The grasshopper-lark began his sibilous note in my fields last Saturday. Nothing can be more amusing than the whisper of this little bird, which seems to be close by though at a hundred yards' distance ; and when close at your ear, is scarce any louder than when a great way off. Had I not been a little acquainted with insects, and known that the grasshopper kind is not yet hatched, I should have hardly believed but that it had been a *locusta* whispering in the bushes. The country people laugh when you tell them that it is the note of a bird. It is a most artful creature, skulking in the thickest part of a bush, and will sing at a yard distance, provided it be concealed. I was obliged to get a person to go on the other side of the hedge where it haunted, and then it would run, creeping like a mouse, before us for a hundred yards together, through the bottom of the thorns ; yet it would not come into fair sight ; but in a morning early, and when undisturbed, it sings on the top of a twig, gaping and shivering

with its wings. Mr. Ray himself had no knowledge of this bird, but received his account from Mr. Johnson, who apparently confounds it with the *reguli non cristati*, from which it is very distinct. See Ray's "Philos. Letters," p. 108.

The fly-catcher (*stoparola*) has not yet appeared; it usually breeds in my vine. The redstart begins to sing, its note is short and imperfect, but is continued till about the middle of June. The willow-wrens (the smaller sort) are horrid pests in a garden, destroying the peas, cherries, currants, etc.; and are so tame that a gun will not scare them.

A LIST OF THE SUMMER BIRDS OF PASSAGE DISCOVERED IN THIS NEIGHBOURHOOD, RANGED SOMEWHAT IN THE ORDER IN WHICH THEY APPEAR.

LINNÆI NOMINA.

Smallest willow-wren,	<i>Motacilla trochilus.</i>
Wryneck,	<i>Jynx torquilla.</i>
House-swallow,	<i>Hirundo rustica.</i>
Martin,	<i>Hirundo urbica.</i>
Sand-martin,	<i>Hirundo riparia.</i>
Cuckoo,	<i>Cuculus canorus.</i>
Nightingale,	<i>Motacilla lusciniæ.</i>
Blackcap,	<i>Motacilla atricapilla.</i>
Whitethroat,	<i>Motacilla sylvia.</i>
Middle willow-wren,	<i>Motacilla trochilus.</i>
Swift,	<i>Hirundo apus.</i>
Stone-curlew?	<i>Charadrius ædicnemus?</i>

Turtle-dove?	<i>Turtur aldrovandi?</i>
Grasshopper-lark,	<i>Alauda trivialis.</i>
Landrail,	<i>Rallus crex.</i>
Largest willow-wren,	<i>Motacilla trochilus.</i>
Redstart,	<i>Motacilla phænicurus.</i>
Goat-sucker, or fern-owl,	<i>Caprimulgus europæus.</i>
Fly-catcher,	<i>Muscicapa grisola.</i>

My countrymen talk much of a bird that makes a clatter with its bill against a dead bough, or some old pales, calling it a jar-bird. I procured one to be shot in the very fact; it proved to be the *Sitta europæa* (the nuthatch). Mr. Ray says that the less spotted woodpecker does the same. This noise may be heard a furlong or more.

Now is the only time to ascertain the short-winged summer birds; for, when the leaf is out, there is no making any remarks on such a restless tribe; and when once the young begin to appear it is all confusion: there is no distinction of genus, species, or sex.

In breeding-time snipes play over the moors, piping and humming; they always hum as they are descending. Is not their hum ventriloquous like that of the turkey? Some suspect it is made by their wings.

This morning I saw the golden-crowned wren, whose crown glitters like burnished gold. It often hangs like a titmouse, with its back downwards.

Yours, etc., etc.

LETTER XVII.

SELBORNE, *June 18th, 1768.*

DEAR SIR,—On Wednesday last arrived your agreeable letter of June 10th. It gives me great satisfaction to find that you pursue these studies still with such vigour, and are in such forwardness with regard to reptiles and fishes.

The reptiles, few as they are, I am not acquainted with, so well as I could wish, with regard to their natural history. There is a degree of dubiousness and obscurity attending the propagation of this class of animals, something analogous to that of the *cryptogamia* in the sexual system of plants : and the case is the same with regard to some of the fishes, as the eel, etc.

The method in which toads procreate and bring forth seems to be very much in the dark. Some authors say that they are viviparous, and yet Ray classes them among his oviparous animals, and is silent with regard to the manner of their bringing forth. Perhaps they may be *ἔσω μὲν ὠοτόκοι, ἔξω δὲ ζωοτόκοι*, as is known to be the case with the viper.

The copulation of frogs (or at least the appearance of it) is notorious to everybody, because we see them sticking upon each other's backs, for a month together

in the spring: and yet I never saw, or read, of toads being observed in the same situation. It is strange that the matter with regard to the venom of toads has not been yet settled. That they are not noxious to some animals is plain, for ducks, buzzards, owls, stone-curlews, and snakes, eat them, to my knowledge, with impunity. And I well remember the time, but was not eye-witness to the fact (though numbers of persons were), when a quack, at this village, ate a toad to make the country people stare; afterwards he drank oil.

I have been informed also, from undoubted authority, that some ladies (ladies you will say of peculiar taste) took a fancy to a toad, which they nourished, summer after summer, for many years, till he grew to a monstrous size, with the maggots which turn to flesh-flies. The reptile used to come forth every evening from a hole under the garden steps, and was taken up, after supper, on the table to be fed. But at last a tame raven, kenning him as he put forth his head, gave him such a severe stroke with his horny beak as put out one eye. After this accident the creature languished for some time and died.

I need not remind a gentleman of your extensive reading of the excellent account there is from Mr. Derham, in Ray's "Wisdom of God in the Creation" (p. 365), concerning the migration of frogs from their breeding ponds. In this account he at once subverts

that foolish opinion of their dropping from the clouds in rain, showing that it is from the grateful coolness and moisture of those showers that they are tempted to set out on their travels, which they defer till those fall. Frogs are as yet in their tadpole state; but, in a few weeks, our lanes, paths, fields, will swarm for a few days with myriads of those emigrants, no larger than my little finger nail. Swammerdam gives a most accurate account of the method and situation in which the male impregnates the spawn of the female. How wonderful is the economy of Providence with regard to the limbs of so vile a reptile! While it is an aquatic it has a fish-like tail, and no legs; as soon as the legs sprout, the tail drops off as useless, and the animal betakes itself to the land!

Merret, I trust, is widely mistaken when he advances that the *rana arborea* is an English reptile; it abounds in Germany and Switzerland.

It is to be remembered that the *salamandra aquatica* of Ray (the water-newt or eft) will frequently bite at the angler's bait, and is often caught on his hook. I used to take it for granted that the *salamandra aquatica* was hatched, lived, and died, in the water. But John Ellis, Esq., F.R.S. (the coralline Ellis), asserts, in a letter to the Royal Society, dated June 5th, 1766, in his account of the *mud inguana*, an amphibious biped from South Carolina, that the water-*eft*, or newt, is

only the larva of the land-eft, as tadpoles are of frogs. Lest I should be suspected to misunderstand his meaning, I shall give it in his own words. Speaking of the *opercula* or coverings to the gills of the *mud inguana*, he proceeds to say that, "The form of these pennated coverings approaches very near to what I have some time ago observed in the larva or aquatic state of our English *lacerta*, known by the name of eft, or newt, which serve them for coverings to their gills, and for fins to swim with while in this state; and which they lose, as well as the fins of their tails, when they change their state and become land animals, as I have observed, by keeping them alive for some time myself."

Linnaeus, in his "Systema Naturæ," hints at what Mr. Ellis advances more than once.

Providence has been so indulgent to us as to allow of but one venomous reptile of the serpent kind in these kingdoms, and that is the viper. As you propose the good of mankind to be an object of your publications, you will not omit to mention common salad-oil as a sovereign remedy against the bite of the viper. As to the blind worm (*anguis fragilis*, so-called because it snaps in sunder with a small blow), I have found, on examination, that it is perfectly innocuous. A neighbouring yeoman (to whom I am indebted for some good hints) killed and opened a female viper about the 27th May: he found her filled with a chain

of eleven eggs, about the size of those of a blackbird; but none of them were advanced so far towards a state of maturity as to contain any rudiments of young. Though they are oviparous, yet they are viviparous also, hatching their young within their bellies, and then bringing them forth. Whereas snakes lay chains of eggs every summer in my melon beds, in spite of all that my people can do to prevent them; which eggs do not hatch till the spring following, as I have often experienced. Several intelligent folks assure me that they have seen the viper open her mouth and admit her helpless young down her throat on sudden surprises, just as the female opossum does her brood into the pouch under her belly, upon the like emergencies; and yet the London viper-catchers insist on it, to Mr. Barrington, that no such thing ever happens. The serpent kind eat, I believe, but once in a year; or rather, but only just at one season of the year. Country people talk much of a water-snake, but, I am pretty sure, without any reason; for the common snake (*coluber natrix*) delights much to sport in the water, perhaps with a view to procure frogs and other food.

I cannot well guess how you are to make out your twelve species of reptiles, unless it be by the various species, or rather varieties, of our *lacerti*, of which Ray enumerates five. I have not had opportunity of ascertaining these; but remember well to have seen

formerly several beautiful green *lacerti* on the sunny sandbanks near Farnham, in Surrey; and Ray admits there are such in Ireland.

LETTER XVIII.

SELBORNE, *July 27th*, 1768.

DEAR SIR,—I received your obliging and communicative letter of June 28th, while I was on a visit at a gentleman's house, where I had neither books to turn to nor leisure to sit down, to return you an answer to many queries, which I wanted to resolve in the best manner that I am able.

A person, by my order, has searched our brooks, but could find no such fish as the *gasterosteus pungitius*; he found the *gasterosteus aculeatus* in plenty. This morning, in a basket, I packed a little earthen pot full of wet moss, and in it some sticklebacks, male and female, the females big with spawn; some lamperns; some bull's heads; but I could procure no minnows. This basket will be in Fleet Street by eight this evening; so I hope Mazel will have them fresh and fair to-morrow morning. I gave some directions, in a letter, to what particulars the engraver should be attentive.

Finding, while I was on a visit, that I was within a reasonable distance of Ambresbury, I sent a servant over to that town, and procured several living specimens of loaches, which he brought, safe and brisk, in a glass decanter. They were taken in the gullies that were cut for watering the meadows. From these fishes (which measured from two to four inches in length) I took the following description: "The loach, in its general aspect, has a pellucid appearance; its back is mottled with irregular collections of small black dots, not reaching much below the *linea lateralis*, as are the back and tail fins; a black line runs from each eye down to the nose; its belly is of a silvery white; the upper jaw projects beyond the lower, and is surrounded with six feelers, three on each side; its pectoral fins are large, its ventral much smaller; the fin behind its anus small; its dorsal-fin large, containing eight spines; its tail, where it joins to the tail-fin, remarkably broad, without any taperness, so as to be characteristic of this genus; the tail-fin is broad, and square at the end. From the breadth and muscular strength of the tail it appears to be an active, nimble fish."

In my visit I was not very far from Hungerford, and did not forget to make some inquiries concerning the wonderful method of curing cancers by means of toads. Several intelligent persons, both gentry and clergy, do

I find give a great deal of credit to what is asserted in the papers, and I myself dined with a clergyman who seemed to be persuaded that what is related is matter of fact; but, when I came to attend to his account, I thought I discerned circumstances which did not a little invalidate the woman's story of the manner in which she came by her skill. She says of herself, "that, labouring under a virulent cancer, she went to some church where there was a vast crowd; on going into a pew, she was accosted by a strange clergyman, who, after expressing compassion for her situation, told her that if she would make such an application of living toads as is mentioned she would be well." Now is it likely that this unknown gentleman should express so much tenderness for this single sufferer, and not feel any for the many thousands that daily languish under this terrible disorder? Would he not have made use of this invaluable nostrum for his own emolument; or at least, by some means of publication or other, have found a method of making it public for the good of mankind? In short, this woman (as it appears to me), having set up for a cancer-doctress, finds it expedient to amuse the country with this dark and mysterious relation.

The water-eft has not, that I can discern, the least appearance of any gills; for want of which it is continually rising to the surface of the water to take in

fresh air. I opened a big-bellied one indeed, and found it full of spawn. Not that this circumstance at all invalidates the assertion that they are *larvæ*, for the *larvæ* of insects are full of eggs, which they exclude the instant they enter their last state. The water-eft is continually climbing over the brims of the vessel, within which we keep it in water, and wandering away; and people every summer see numbers crawling out of the pools where they are hatched up the dry banks. There are varieties of them, differing in colour; and some have fins up their tail and back, and some have not.

LETTER XIX.

SELBORNE, August 17th, 1768.

DEAR SIR,—I have now, past dispute, made out three distinct species of the willow-wrens (*motacillæ trochili*) which constantly and invariably use distinct notes. But at the same time I am obliged to confess that I know nothing of your willow-lark. In my letter of April 18th, I had told you peremptorily that I knew your willow-lark, but had not seen it then; but when I came to procure it, it proved in all respects a very *motacilla trochilus*, only that it is a size larger than

the two other, and the yellow-green of the whole upper part of the body is more vivid, and the belly of a clearer white. I have specimens of the three sorts now lying before me, and can discern that there are three gradations of sizes, and that the least has black legs, and the other two flesh-coloured ones. The yellowest bird is considerably the largest, and has its quill-feathers and secondary feathers tipped with white, which the others have not. This last haunts only the tops of trees in high beechen woods, and makes a sibilous grasshopper-like noise, now and then, at short intervals, shivering a little with its wings when it sings; and is, I make no doubt now, the *regulus non cristatus* of Ray, which he says "*cantat voce stridulâ locustæ.*" Yet this great ornithologist never suspected that there were three species.

LETTER XX.

SELBORNE, October 8th, 1768.

IT is I find in zoology as it is in botany; all nature is so full that that district produces the greatest variety which is the most examined. Several birds, which are said to belong to the north only, are it seems often in the south. I have discovered this summer three

species of birds with us, which writers mention as only to be seen in the northern counties. The first that was brought me (on the 14th May) was the sand-piper, *tringa hypoleucus*: it was a cock bird, and haunted the banks of some ponds near the village; and, as it had a companion, doubtless intended to have bred near that water. Besides, the owner has told me since that, on recollection, he has seen some of the same birds round his ponds in former summers.

The next bird that I procured (on the 21st May) was a male red-backed butcher bird, *lanius collurio*. My neighbour, who shot it, says that it might easily have escaped his notice, had not the outcries and chattering of the whitethroats and other small birds drawn his attention to the bush where it was; its craw was filled with the legs and wings of beetles.

The next rare birds (which were procured for me last week) were some ring-ousels, *turdi torquati*.

This week twelve months a gentleman from London, being with us, was amusing himself with a gun, and found, he told us, on an old yew hedge where there were berries, some birds like blackbirds, with rings of white round their necks: a neighbouring farmer also at the same time observed the same; but, as no specimens were procured, little notice was taken. I mentioned this circumstance to you in my letter of November 4th, 1767 (you, however, paid but small

regard to what I said, as I had not seen these birds myself); but last week the aforesaid farmer, seeing a large flock, twenty or thirty of these birds, shot two cocks and two hens, and says, on recollection, that he remembers to have observed these birds again last spring, about Lady-day, as it were on their return to the north. Now perhaps these ousels are not the ousels of the north of England, but belong to the more northern parts of Europe, and may retire before the excessive rigour of the frosts in those parts, and return to breed in the spring, when the cold abates. If this be the case, here is discovered a new bird of winter passage, concerning whose migrations the writers are silent; but if these birds should prove the ousels of the north of England, then here is a migration disclosed within our own kingdom never before remarked. It does not yet appear whether they retire beyond the bounds of our island to the south; but it is most probable that they usually do, or else one cannot suppose that they would have continued so long unnoticed in the southern countries. The ousel is larger than a black-bird, and feeds on haws; but last autumn (when there were no haws) it fed on yew-berries: in the spring it feeds on ivy-berries, which ripen only at that season, in March and April.

I must not omit to tell you (as you have been so lately on the study of reptiles) that my people, every

now and then of late, draw up with a bucket of water from my well, which is sixty-three feet deep, a large black warty lizard with a fin-tail and yellow belly. How they first came down at that depth, and how they were ever to have got out thence without help, is more than I am able to say.

My thanks are due to you for your trouble and care in the examination of a buck's head. As far as your discoveries reach at present, they seem much to corroborate my suspicions; and I hope Mr. — may find reason to give his decision in my favour; and then, I think, we may advance this extraordinary provision of nature as a new instance of the wisdom of God in the creation.

As yet I have not quite done with my history of the *cedicnemus*, or stone-curlew; for I shall desire a gentleman in Sussex (near whose house these birds congregate in vast flocks in the autumn) to observe nicely when they leave him (if they do leave him), and when they return again in the spring: I was with this gentleman lately, and saw several single birds.

LETTER XXI.

SELBORNE, Nov. 28th, 1768.

DEAR SIR,—With regard to the *œdicnemus*, or stone-curlew, I intend to write very soon to my friend near Chichester, in whose neighbourhood these birds seem most to abound, and shall urge him to take particular notice when they begin to congregate, and afterwards to watch them most narrowly whether they do not withdraw themselves during the dead of the winter. When I have obtained information with respect to this circumstance, I shall have finished my history of the stone-curlew, which I hope will prove to your satisfaction, as it will be, I trust, very near the truth. This gentleman, as he occupies a large farm of his own, and is abroad early and late, will be a very proper spy upon the motions of these birds; and besides, as I have prevailed on him to buy the Naturalist's Journal (with which he is much delighted), I shall expect that he will be very exact in his dates. It is very extraordinary, as you observe, that a bird so common with us should never struggle to you.

And here will be the properest place to mention, while I think of it, an anecdote which the above-mentioned gentleman told me when I was last at his house; which was that, in a warren joining to his

outlet, many daws (*corvi monedula*) build every year in the rabbit-burrows under ground. The way he and his brothers used to take their nests, while they were boys, was by listening at the mouths of the holes, and, if they heard the young ones cry, they twisted the nest out with a forked stick. Some water-fowls (*viz.*, the puffins) breed, I know, in that manner; but I should never have suspected the daws of building in holes on the flat ground.

Another very unlikely spot is made use of by daws as a place to breed in, and that is Stonehenge. These birds deposit their nests in the interstices between the upright and the impost stones of that amazing work of antiquity; which circumstance alone speaks the prodigious height of the upright stones, that they should be tall enough to secure those nests from the annoyance of shepherd-boys, who are always idling round that place.

One of my neighbours last Saturday, November 26th, saw a martin in a sheltered bottom: the sun shone warm, and the bird was hawking briskly after flies. I am now perfectly satisfied that they do not all leave this island in the winter.

You judge very right, I think, in speaking with reserve and caution concerning the cures done by toads; for, let people advance what they will on such subjects, yet there is such a propensity in mankind

towards deceiving and being deceived, that one cannot safely relate anything from common report, especially in print, without expressing some degree of doubt and suspicion.

Your approbation with regard to my new discovery of the migration of the ring-ousel gives me satisfaction; and I find you concur with me in suspecting that they are foreign birds which visit us. You will be sure, I hope, not to omit to make inquiry whether your ring-ousels leave your rocks in the autumn. What puzzles me most is the very short stay they make with us, for in about three weeks they are all gone. I shall be very curious to remark whether they will call on us at their return in the spring, as they did last year.

I want to be better informed with regard to ichthyology. If fortune had settled me near the seaside, or near some great river, my natural propensity would soon have urged me to have made myself acquainted with their productions; but as I have lived mostly in inland parts, and in an upland district, my knowledge of fishes extends little farther than to those common sorts which our brooks and lakes produce.

I am, etc.

LETTER. XXII.

SELBORNE, *Jan. 2nd, 1769.*

DEAR SIR,—As to the peculiarity of jackdaws building with us under the ground in rabbit-burrows, you have, in part, hit upon the reason; for, in reality, there are hardly any towers or steeples in all this county. And perhaps, Norfolk excepted, Hampshire and Sussex are as meanly furnished with churches as almost any counties in the kingdom. We have many livings of two or three hundred pounds a year, whose houses of worship make little better appearance than dovecots. When I first saw Northamptonshire, Cambridgeshire, and Huntingdonshire, and the fens of Lincolnshire, I was amazed at the number of spires which presented themselves in every point of view. As an admirer of prospects, I have reason to lament this want in my own county; for such objects are very necessary ingredients in an elegant landscape.

What you mention with respect to reclaimed toads raises my curiosity. An ancient author, though no naturalist, has well remarked that “every kind of beasts, and of birds, and of serpents, and things in the sea, is tamed, and hath been tamed, of mankind.”

It is a satisfaction to me to find that a green lizard has actually been procured for you in Devonshire, because it corroborates my discovery, which I made many years ago, of the same sort, on a sunny sandbank near Farnham, in Surrey. I am well acquainted with the South Hams of Devonshire, and can suppose that district, from its southerly situation, to be a proper habitation for such animals in their best colours.

Since the ring-ousels of your vast mountains do certainly not forsake them against winter, our suspicions that those which visit this neighbourhood about Michaelmas are not English birds, but driven from the more northern parts of Europe by the frosts, are still more reasonable; and it will be worth your pains to endeavour to trace from whence they come, and to inquire why they make so very short a stay.

In your account of your error with regard to the two species of herons, you incidentally gave me great entertainment in your description of the heronry at Cressi Hall, which is a curiosity I never could manage to see. Fourscore nests of such a bird on one tree is a rarity which I would ride half as many miles to have a sight of. Pray be sure to tell me in your next whose seat Cressi Hall is, and near what town it lies. I have often thought that those vast extents of fens

have never been sufficiently explored. If half a dozen gentlemen, furnished with a good strength of water-spaniels, were to beat them over for a week, they would certainly find more species.

There is no bird, I believe, whose manners I have studied more than that of the *caprimulgus* (the goat-sucker), as it is a wonderful and curious creature; but I have always found that though sometimes it may chatter as it flies, as I know it does, yet in general it utters its jarring note sitting on a bough; and I have for many a half hour watched it as it sat with its under mandible quivering, and particularly this summer. It perches usually on a bare twig, with its head lower than its tail, in an attitude well expressed by your draughtsman in the folio "British Zoology." This bird is most punctual in beginning its song exactly at the close of day—so exactly that I have known it strike up more than once or twice just at the report of the Portsmouth evening gun, which we can hear when the weather is still. It appears to me past all doubt that its notes are formed by organic impulse, by the powers of the parts of its windpipe formed for sound, just as cats purr. You will credit me, I hope, when I assure you that, as my neighbours were assembled in an hermitage on the side of a steep hill where we drink tea, one of these churn-owls came and settled on the cross of that little straw edifice and began to

chatter, and continued his note for many minutes : and we were all struck with wonder to find that the organs of that little animal, when put in motion, gave a sensible vibration to the whole building ! This bird also sometimes makes a small squeak, repeated four or five times ; and I have observed that to happen when the cock has been pursuing the hen in a toying way through the boughs of a tree.

It would not be at all strange if your bat, which you have procured, should prove a new one, since five species have been found in a neighbouring kingdom. The great sort that I mentioned is certainly a non-descript ; I saw but one this summer, and that I had no opportunity of taking.

Your account of the Indian grass was entertaining. I am no angler myself ; but inquiring of those that are, what they supposed that part of their tackle to be made of ?—they replied, “ Of the intestines of a silk-worm.”

Though I must not pretend to great skill in entomology, yet I cannot say that I am ignorant of that kind of knowledge ; I may now and then perhaps be able to furnish you with a little information.

The vast rains ceased with us much about the same time as with you, and since we have had delicate weather. Mr. Barker, who has measured the rain for

more than thirty years, says, in a late letter, that more has fallen this year than in any he ever attended to; though from July, 1763, to January, 1764, more fell than in any seven months of this year.

LETTER XXIII.

SELBORNE, *Feb. 28th*, 1769.

DEAR SIR,—It is not improbable that the Guernsey lizard and our green lizards may be specifically the same; all that I know is, that, when some years ago many Guernsey lizards were turned loose in Pembroke College garden, in the University of Oxford, they lived a great while, and seemed to enjoy themselves very well, but never bred. Whether this circumstance will prove anything either way I shall not pretend to say.

I return you thanks for your account of Cressi Hall; but recollect, not without regret, that in June, 1746, I was visiting for a week together at Spalding, without ever being told that such a curiosity was just at hand. Pray send me word in your next what sort of tree it is that contains such a quantity of herons' nests,

and whether the heronry consists of a whole grove of wood, or only of a few trees.

It gave me satisfaction to find we accorded so well about the *caprimulgus*; all I contended for was to prove that it often chatters sitting as well as flying; and therefore the noise was voluntary, and from organic impulse, and not from the resistance of the air against the hollow of its mouth and throat.

If ever I saw anything like actual migration, it was last Michaelmas Day. I was travelling, and out early in the morning; at first there was a vast fog, but, by the time that I was got seven or eight miles from home towards the coast, the sun broke out into a delicate warm day. We were then on a large heath or common, and I could discern, as the mist began to break away, great numbers of swallows (*hirundines rusticæ*) clustering on the stunted shrubs and bushes, as if they had roosted there all night. As soon as the air became clear and pleasant they were all on the wing at once; and, by a placid and easy flight, proceeded on southward towards the sea; after this I did not see any more flocks, only now and then a straggler.

I cannot agree with those persons that assert that the swallow kind disappear some and some gradually, as they come, for the bulk of them seem to withdraw at once; only some stragglers stay behind a long while, and do never, there is the greatest reason to believe,

leave this island. Swallows seem to lay themselves up, and to come forth in a warm day, as bats do continually of a warm evening, after they have disappeared for weeks. For a very respectable gentleman assured me that, as he was walking with some friends under Merton Wall on a remarkably hot noon, either in the last week in December or the first week in January, he espied three or four swallows huddled together on the moulding of one of the windows of that college. I have frequently remarked that swallows are seen later at Oxford than elsewhere; is it owing to the vast massy buildings of that place, to the many waters round it, or to what else?

When I used to rise in the morning last autumn, and see the swallows and martins clustering on the chimneys and thatch of the neighbouring cottages, I could not help being touched with a secret delight, mixed with some degree of mortification; with delight, to observe with how much ardour and punctuality those poor little birds obeyed the strong impulse towards migration, or hiding, imprinted on their minds by their great Creator; and with some degree of mortification when I reflected that, after all our pains and inquiries, we are yet not quite certain to what regions they do migrate, and are still farther embarrassed to find that some do not actually migrate at all.

These reflections made so strong an impression on

my imagination, that they became productive of a composition that may perhaps amuse you for a quarter of an hour when next I have the honour of writing to you.

LETTER XXIV.

SELBORNE, *May 29th*, 1769.

DEAR SIR,—The *scarabæus fullo* I know very well, having seen it in collections, but have never been able to discover one wild in its natural state. Mr. Banks told me he thought it might be found on the sea-coast.

On the 13th April I went to the sheep-down, where the *ring-ousels* have been observed to make their appearance at spring and fall, in their way perhaps to the north or south, and was much pleased to see these birds about the usual spot. We shot a cock and a hen; they were plump and in high condition. The hen had but very small rudiments of eggs within her, which proves they are late breeders; whereas those species of the thrush kind that remain with us the whole year have fledged young before that time. In their crops was nothing very distinguishable, but somewhat that seemed like blades of vegetables nearly digested. In

autumn they feed on haws and yew-berries, and in the spring on ivy-berries. I dressed one of these birds, and found it juicy and well-flavoured. It is remarkable that they make but a few days' stay in their spring visit, but rest near a fortnight at Michaelmas. These birds, from the observations of three springs and two autumns, are most punctual in their return, and exhibit a new migration unnoticed by the writers, who supposed they never were to be seen in any southern countries.

One of my neighbours lately brought me a new *salicaria*, which at first I suspected might have proved your willow-lark, but, on a nicer examination, it answered much better to the description of that species which you shot at Revesby, in Lincolnshire. My bird I describe thus: "It is a size less than the grasshopper-lark; the head, back, and coverts of the wings, of a dusky brown, without those dark spots of the grasshopper-lark; over each eye is a milk-white stroke; the chin and throat are white, and the under parts of a yellowish white; the rump is tawny, and the feathers of the tail sharp-pointed; the bill is dusky and sharp, and the legs are dusky; the hinder claw long and crooked." The person that shot it says that it sung so like a reed-sparrow that he took it for one; and that it sings all night: but this account merits farther inquiry. For my part I suspect it is a second sort of *locustela*,

hinted at by Dr. Derham in Ray's Letters : see p. 108. He also procured me a grasshopper-lark.

The question that you put with regard to those genera of animals that are peculiar to America, viz., how they came there, and whence? is too puzzling for me to answer, and yet so obvious as often to have struck me with wonder. If one looks into the writers on that subject, little satisfaction is to be found. Ingenious men will readily advance plausible arguments to support whatever theory they shall choose to maintain; but then the misfortune is, every one's hypothesis is each as good as another's, since they are all founded on conjecture. The late writers of this sort, in whom may be seen all the arguments of those that have gone before, as I remember, stock America from the western coast of Africa and the south of Europe, and then break down the Isthmus that bridged over the Atlantic. But this is making use of a violent piece of machinery; it is a difficulty worthy of the interposition of a god! "*Incredulus odi.*"

TO THOMAS PENNANT, ESQUIRE.

THE NATURALIST'S SUMMER-EVENING
WALK.

——equidem credo, quia sit divinitus illis

Ingenium.

VIRG. *Georg.*

WHEN day declining sheds a milder gleam,
What time the may-fly haunts the pool or stream ;
When the still owl skims round the grassy mead,
What time the timorous hare limps forth to feed ;
Then be the time to steal adown the vale,
And listen to the vagrant cuckoo's tale ;
To hear the clamorous curlew call his mate,
Or the soft quail his tender pain relate ;
To see the swallow sweep the dark'ning plain
Belated, to support her infant train ;
To mark the swift in rapid giddy ring
Dash round the steeple, unsubdued of wing :
Amusive birds !—say where your hid retreat
When the frost rages and the tempests beat ;
Whence your return, by such nice instinct led,
When spring, soft season, lifts her bloomy head ?
Such baffled searches mock man's prying pride,
The GOD of NATURE is your secret guide !

While deep'ning shades obscure the face of day,

To yonder bench leaf-shelter'd let us stray,
Till blended objects fail the swimming sight,
And all the fading landscape sinks in night ;
To hear the drowsy dor come brushing by
With buzzing wing, or the shrill cricket cry ;
To see the feeding bat glance through the wood ;
To catch the distant falling of the flood ;
While o'er the cliff th' awaken'd churn-owl hung
Through the still gloom protracts his chattering song ;
While high in air, and poised upon his wings,
Unseen, the soft-enamour'd woodlark sings :
These, NATURE'S works, the curious mind employ,
Inspire a soothing melancholy joy :

As fancy warms, a pleasing kind of pain
Steals o'er the cheek, and thrills the creeping vein !

Each rural sight, each sound, each smell, combine ;
The tinkling sheep-bell or the breath of kine ;
The new-mown hay that scents the swelling breeze,
Or cottage-chimney smoking through the trees.

The chilling night-dews fall—away, retire !
For see, the glow-worm lights her amorous fire !
Thus, ere night's veil had half obscured the sky,
Th' impatient damsel hung her lamp on high :
True to the signal, by love's meteor led,
Leander hasten'd to his Hero's bed.

I am, etc.

LETTER XXV.

SELBORNE, Aug. 30th, 1769.

DEAR SIR,—It gives me satisfaction to find that my account of the *ousel migration* pleases you. You put a very shrewd question when you ask me how I know that their autumnal migration is southward? Was not candour and openness the very life of natural history, I should pass over this query just as a sly commentator does over a crabbed passage in a classic; but common ingenuousness obliges me to confess, not without some degree of shame, that I only reasoned in that case from analogy. For as all other autumnal birds migrate from the northward to us, to partake of our milder winters, and return to the northward again when the rigorous cold abates, so I concluded that the ring-ousels did the same, as well as their congeners the fieldfares; and especially as ring-ousels are known to haunt cold mountainous countries: but I have good reason to suspect, since, that they may come to us from the westward, because I hear from very good authority that they breed on Dartmoor, and that they forsake that wild district about the time that our visitors appear, and do not return till late in the spring.

I have taken a great deal of pains about your *salicaria* and mine, with a white stroke over its eye

and a tawny rump. I have surveyed it alive and dead, and have procured several specimens, and am perfectly persuaded myself (and trust you will soon become convinced of the same) that it is no more nor less than the *passer arundinaceus minor* of Ray. This bird, by some means or other, seems to be entirely omitted in the British Zoology; and one reason probably was because it is so strangely classed in Ray, who ranges it among his *piceis affines*. It ought, no doubt, to have gone among his *aviculæ caudâ unicolore*, and among your slender-billed small birds of the same division. Linnæus might with great propriety have put it into his genus of *motacilla*; and *motacilla salicaria* of his *fauna suecica* seems to come the nearest to it. It is no uncommon bird, haunting the sides of ponds and rivers where there is covert, and the reeds and sedges of moors. The country people in some places call it the sedge-bird. It sings incessantly night and day during the breeding-time, imitating the note of a sparrow, a swallow, a skylark, and has a strange hurrying manner in its song. My specimens correspond most minutely to the description of your *fen salicaria* shot near Revesby. Mr. Ray has given an excellent characteristic of it when he says, "*Rostrum et pedes in hac aviculâ multò majores sunt quàm pro corpore ratione.*" See letter, May 29th, 1769. (Preceding letter xxiv.)

I have got you the egg of an *œdicnemus*, or stone-curlew, which was picked up in a fallow on the naked ground. There were two, but the finder inadvertently crushed one with his foot before he saw them.

When I wrote to you last year on reptiles, I wish I had not forgot to mention the faculty that snakes have of stinking *se defendendo*. I knew a gentleman who kept a tame snake, which was in its person as sweet as any animal while in good humour and unalarmed, but as soon as a stranger, or a dog or cat, came in, it fell to hissing, and filled the room with such nauseous effluvia as rendered it hardly supportable. Thus the squunk, or stonek, of Ray's "Synop. Quadr." is an innocuous and sweet animal; but, when pressed hard by dogs and men, it can eject such a most pestilent and fetid smell and excrement, that nothing can be more horrible.

A gentleman sent me lately a fine specimen of the *lanius minor cinerascens cum maculâ in scapulis albâ, Raii*; which is a bird that, at the time of your publishing your two first volumes of "British Zoology," I find you had not seen. You have described it well from Edwards's drawing.

LETTER XXVI.

SELBORNE, *December 8th*, 1769.

DEAR SIR,—I was much gratified by your communicative letter on your return from Scotland, where you spent some considerable time, and gave yourself good room to examine the natural curiosities of that extensive kingdom, both those of the islands, as well as those of the highlands. The usual bane of such expeditions is hurry, because men seldom allot themselves half the time they should do, but, fixing on a day for their return, post from place to place, rather as if they were on a journey that required despatch than as philosophers investigating the works of nature. You must have made, no doubt, many discoveries, and laid up a good fund of materials for a future edition of the “British Zoology;” and will have no reason to repent that you have bestowed so much pains on a part of Great Britain that perhaps was never so well examined before.

It has always been matter of wonder to me that fieldfares, which are so congenerous to thrushes and blackbirds, should never choose to breed in England; but that they should not think even the highlands cold and northerly, and sequestered enough, is a circumstance still more strange and wonderful. The ring-

ousel, you find, stays in Scotland the whole year round, so that we have reason to conclude that those migrators that visit us for a short space every autumn do not come from thence.

And here, I think, will be the proper place to mention that those birds were most punctual again in their migration this autumn, appearing, as before, about the 30th September; but their flocks were larger than common, and their stay protracted somewhat beyond the usual time. If they came to spend the whole winter with us, as some of their congeners do, and then left us, as they do, in spring, I should not be so much struck with the occurrence, since it would be similar to that of the other winter birds of passage; but when I see them for a fortnight at Michaelmas, and again for about a week in the middle of April, I am seized with wonder, and long to be informed whence these travellers come, and whither they go, since they seem to use our hills merely as an inn or baiting place.

Your account of the greater brambling, or snow-fleck, is very amusing; and strange it is that such a short-winged bird should delight in such perilous voyages over the northern ocean. Some country people in the winter time have, every now and then, told me that they have seen two or three white larks on our downs, but, on considering the matter, I begin to

suspect that these are some stragglers of the birds we are talking of, which sometimes perhaps may rove so far to the southward.

It pleases me to find that white hares are so frequent on the Scottish mountains, and especially as you inform me that it is a distinct species, for the quadrupeds of Britain are so few, that every new species is a great acquisition.

The eagle-owl, could it be proved to belong to us, is so majestic a bird, that it would grace our *fauna* much. I never was informed before where wild geese are known to breed.

You admit, I find, that I have proved your *fen salicaria* to be the lesser reed-sparrow of Ray; and I think you may be secure that I am right, for I took very particular pains to clear up that matter, and had some fair specimens, but, as they were not well preserved, they are decayed already. You will, no doubt, insert it in its proper place in your next edition. Your additional plates will much improve your work.

De Buffon, I know, has described the water shrew-mouse; but still I am pleased to find you have discovered it in Lincolnshire, for the reason I have given in the article of the white hare.

As a neighbour was lately ploughing a dry, chalky field, far removed from any water, he turned out a water-rat, that was curiously lain up in a hybernaculum

artificially formed of grass and leaves. At one end of the burrow lay above a gallon of potatoes regularly stowed, on which it was to have supported itself for the winter. But the difficulty with me is how this *amphibius mus* came to fix its winter station at such a distance from the water. Was it determined in its choice of that place by the mere accident of finding the potatoes which were planted there, or is it the constant practice of the aquatic rat to forsake the neighbourhood of the water in the colder months?

Though I delight very little in analogous reasoning, knowing how fallacious it is with respect to natural history, yet, in the following instance, I cannot help being inclined to think it may conduce towards the explanation of a difficulty that I have mentioned before, with respect to the invariable early retreat of the *hirundo apus*, or swift, so many weeks before its congeners; and that not only with us, but also in Andalusia, where they also begin to retire about the beginning of August.

The great large bat (which, by-the-bye, is at present a nondescript in England, and what I have never been able yet to procure) retires or migrates very early in the summer. It also ranges very high for its food, feeding in a different region of the air, and that is the reason I never could procure one. Now this is exactly the case with the swifts; for they take their food in a

more exalted region than the other species, and are very seldom seen hawking for flies near the ground, or over the surface of the water. From hence I would conclude that these *hirundines* and the larger bats are supported by some sorts of high-flying gnats, scarabs, or *phalænæ*, that are of short continuance, and that the short stay of these strangers is regulated by the defect of their food.

By my journal it appears that curlews clamoured on to October 31st, since which I have not seen nor heard any. Swallows were observed on to November 3rd.

LETTER XXVII.

SELBORNE, Feb. 22nd, 1770.

DEAR SIR,—Hedgehogs abound in my gardens and fields. The manner in which they eat the roots of the plantain in my grass-walks is very curious; with their upper mandible, which is much longer than their lower, they bore under the plant, and so eat the root off upwards, leaving the tuft of leaves untouched. In this respect they are serviceable, as they destroy a very troublesome weed; but they deface the walks in some

measure by digging little round holes. It appears, by the dung that they drop upon the turf, that beetles are no inconsiderable part of their food. In June last I procured a litter of four or five young hedgehogs, which appeared to be about five or six days old: they, I find, like puppies, are born blind, and could not see when they came to my hands. No doubt their spines are soft and flexible at the time of their birth, or else the poor dam would have but a bad time of it in the critical moment of parturition, but it is plain they soon harden; for these little pigs had such stiff prickles on their backs and sides as would easily have fetched blood, had they not been handled with caution. Their spines are quite white at this age; and they have little hanging ears, which I do not remember to be discernible in the old ones. They can, in part, at this age draw their skin down over their faces, but are not able to contract themselves into a ball, as they do, for the sake of defence, when full grown. The reason, I suppose, is, because the curious muscle that enables the creature to roll itself up in a ball was not then arrived at its full tone and firmness. Hedgehogs make a deep and warm *hybernaculum* with leaves and moss, in which they conceal themselves for the winter: but I never could find that they stored in any winter provision, as some quadrupeds certainly do.

I have discovered an anecdote with respect to the

fieldfare (*turdus pilaris*) which I think is particular enough; this bird, though it sits on trees in the day-time, and procures the greatest part of its food from white-thorn hedges, yea, moreover, builds on very high trees, as may be seen by the *fauna suecica*; yet always appears with us to roost on the ground. They are seen to come in flocks just before it is dark, and to settle and nestle among the heath on our forest. And besides, the larkers, in dragging their nets by night, frequently catch them in the wheat stubbles; while the bat-fowlers, who take many red-wings in the hedges, never entangle any of this species. Why these birds, in the matter of roosting, should differ from all their congeners, and from themselves also with respect to their proceedings by day, is a fact for which I am by no means able to account.

I have somewhat to inform you of concerning the *moose-deer*; but in general foreign animals fall seldom in my way; my little intelligence is confined to the narrow sphere of my own observations at home.

LETTER XXVIII.

SELBORNE, *March*, 1770.

ON Michaelmas Day, 1768, I managed to get a sight of the female moose belonging to the Duke of Richmond, at Goodwood; but was greatly disappointed, when I arrived at the spot, to find that it died, after having appeared in a languishing way for some time, on the morning before. However, understanding that it was not stripped, I proceeded to examine this rare quadruped; I found it in an old greenhouse, slung under the belly and chin by ropes, and in a standing posture; but, though it had been dead for so short a time, it was in so putrid a state that the stench was hardly supportable. The grand distinction between this deer, and any other species that I have ever met with, consisted in the strange length of its legs, on which it was tilted up much in the manner of the birds of the *grallæ* order. I measured it, as they do a horse, and found that, from the ground to the withers, it was just five feet four inches, which height answers exactly to sixteen hands, a growth that few horses arrive at: but then, with this length of legs, its neck was remarkably short, no more than twelve inches; so that, by straddling with one foot forward and the other backward, it grazed on the plain ground, with

the greatest difficulty, between its legs ; the ears were vast and lopping, and as long as the neck ; the head was about twenty inches long, and ass-like, and had such a redundancy of upper lip as I never saw before, with huge nostrils. This lip, travellers say, is esteemed a dainty dish in North America. It is very reasonable to suppose that this creature supports itself chiefly by browsing of trees, and by wading after water plants ; towards which way of livelihood the length of legs and great lip must contribute much. I have read somewhere that it delights in eating the *nymphaea*, or water-lily. From the fore-feet to the belly behind the shoulder it measured three feet and eight inches : the length of the legs before and behind consisted a great deal in the *tibia*, which was strangely long ; but in my haste to get out of the stench, I forgot to measure that joint exactly. Its scut seemed to be about an inch long ; the colour was a grizzly black ; the mane about four inches long ; the fore-hoofs were upright and shapely, the hind flat and splayed. The spring before it was only two years old, so that most probably it was not then come to its growth. What a vast, tall beast must a full-grown stag be ! I have been told some arrive at ten feet and a half ! This poor creature had at first a female companion of the same species, which died the spring before. In the same garden was a young stag, or red deer, between whom and this moose

it was hoped that there might have been a breed; but their inequality of height must have always been a bar to any commerce of the amorous kind. I should have been glad to have examined the teeth, tongue, lips, hoofs, etc., minutely, but the putrefaction precluded all farther curiosity. This animal, the keeper told me, seemed to enjoy itself best in the extreme frost of the former winter. In the house they showed me the horn of a male moose, which had no front antlers, but only a broad palm with some snags on the edge. The noble owner of the dead moose proposed to make a skeleton of her bones.

Please to let me hear if my female moose corresponds with that you saw, and whether you think still that the American moose and European elk are the same creature.

I am, with the greatest esteem, etc.

LETTER XXIX.

SELBORNE, *May 12th, 1770.*

DEAR SIR,—Last month we had such a series of cold, turbulent weather, such a constant succession of frost, and snow, and hail, and tempest, that the regular

migration or appearance of the summer birds was much interrupted. Some did not show themselves (at least were not heard) till weeks after their usual time, as the blackcap and whitethroat; and some have not been heard yet, as the grasshopper-lark and largest willow-wren. As to the fly-catcher, I have not seen it; it is indeed one of the latest, but should appear about this time: and yet, amidst all this meteorous strife and war of the elements, two swallows discovered themselves, as long ago as April 11th, in frost and snow; but they withdrew quickly, and were not visible again for many days. House-martins, which are always more backward than swallows, were not observed till May came in.

Among the monogamous birds several are to be found, after pairing-time, single, and of each sex; but whether this state of celibacy is matter of choice or necessity, is not so easy discoverable. When the house-sparrows deprive my martins of their nests, as soon as I cause one to be shot, the other, be it cock or hen, presently procures a mate, and so for several times following.

I have known a dove-house infested by a pair of white owls which made great havoc among the young pigeons: one of the owls was shot as soon as possible, but the survivor readily found a mate, and the mischief went on. After some time the

new pair were both destroyed, and the annoyance ceased.

Another instance I remember of a sportsman, whose zeal for the increase of his game being greater than his humanity, after pairing-time he always shot the cock-bird of every couple of partridges upon his grounds; supposing that the rivalry of many males interrupted the breed: he used to say, that, though he had widowed the same hen several times, yet he found she was still provided with a fresh paramour, that did not take her away from her usual haunt.

Again; I knew a lover of setting, an old sportsman, who has often told me that soon after harvest he has frequently taken small coveys of partridges, consisting of cock-birds alone; these he pleasantly used to call old bachelors.

There is a propensity belonging to common house-cats that is very remarkable; I mean their violent fondness for fish, which appears to be their most favourite food: and yet nature in this instance seems to have planted in them an appetite that, unassisted, they know not how to gratify; for of all quadrupeds cats are the least disposed towards water, and will not, when they can avoid it, deign to wet a foot, much less to plunge into that element.

Quadrupeds that prey on fish are amphibious: such is the otter, which by nature is so well formed for

diving, that it makes great havoc among the inhabitants of the waters. Not supposing that we had any of those beasts in our shallow brooks, I was much pleased to see a male otter, brought to me, weighing twenty-one pounds, that had been shot on the bank of our stream below the Priory, where the rivulet divides the parish of Selborne from Hartley Wood.

LETTER XXX.

SELBORNE, Aug. 1st, 1770.

DEAR SIR,—The French, I think, in general are strangely prolix in their natural history. What Linnæus says with respect to insects holds good in every other branch: "*Verbositas presentis sæculi, calamitas artis.*"

Pray how do you approve of Scopoli's new work? As I admire his "*Entomologia*," I long to see it.

I forgot to mention in my last letter (and had not room to insert in the former) that the male moose, in rutting time, swims from island to island, in the lakes and rivers of North America, in pursuit of the females. My friend, the chaplain, saw one killed in the water as it was on that errand in the river St.

Lawrence: it was a monstrous beast, he told me; but he did not take the dimensions.

When I was last in town, our friend Mr. Barrington most obligingly carried me to see many curious sights. As you were then writing to him about horns, he carried me to see many strange and wonderful specimens. There is, I remember, at Lord Pembroke's at Wilton, a horn room furnished with more than thirty different pairs; but I have not seen that house lately.

Mr. Barrington showed me many astonishing collections of stuffed and living birds from all quarters of the world. After I had studied over the latter for a time, I remarked that every species almost that came from distant regions, such as South America, the coast of Guinea, etc., were thick-billed birds of the *loxia* and *fringilla* genera; and no *motacillæ*, or *muscipæ*, were to be met with. When I came to consider, the reason was obvious enough, for the hard-billed birds subsist on seeds which are easily carried on board, while the soft-billed birds, which are supported by worms and insects, or, what is a *succedaneum* for them, fresh raw meat, can meet with neither in long and tedious voyages. It is from this defect of food that our collections (curious as they are) are defective, and we are deprived of some of the most delicate and lively genera.

I am, etc.

LETTER XXXI.

SELBORNE, *Sept. 14th*, 1770.

DEAR SIR,—You saw, I find, the ring-ousels again among their native crags, and are farther assured that they continue resident in those cold regions the whole year. From whence then do our ring-ousels migrate so regularly every September, and make their appearance again, as if in their return, every April? They are more early this year than common, for some were seen at the usual hill on the fourth of this month.

An observing Devonshire gentleman tells me that they frequent some parts of Dartmoor, and breed there, but leave those haunts about the end of September, or beginning of October, and return again about the end of March.

Another intelligent person assures me that they breed in great abundance all over the peak of Derby, and are called there tor-ousels, withdraw in October and November, and return in spring. This information seems to throw some light on my new migration.

Scopoli's new work (which I have just procured) has its merit in ascertaining many of the birds of the Tirol and Carniola. Monographers, come from whence they may, have, I think, fair pretence to challenge some regard and approbation from the lovers of

natural history ; for, as no man can alone investigate the works of nature, these partial writers may, each in their department, be more accurate in their discoveries, and freer from errors, than more general writers ; and so by degrees may pave the way to an universal correct natural history. Not that Scopoli is so circumstantial and attentive to the life and conversation of his birds as I could wish : he advances some false facts ; as when he says of the *hirundo urbica* that "*pullos extra nidum non nutrit.*" This assertion I know to be wrong from repeated observation this summer ; for house-martins do feed their young flying, though it must be acknowledged not so commonly as the house-swallow ; and the feat is done in so quick a manner as not to be perceptible to indifferent observers. He also advances some (I was going to say) improbable facts ; as when he says of the woodcock that "*pullos rostro portat fugiens ab hoste.*" But candour forbids me to say absolutely that any fact is false, because I have never been witness to such a fact. I have only to remark that the long unwieldy bill of the woodcock is perhaps the worst adapted of any among the winged creation for such a feat of natural affection.

I am, etc.

LETTER XXXII.

SELBORNE, *October 29th, 1770.*

DEAR SIR,—After an ineffectual search in Linnæus, Brisson, etc., I begin to suspect that I discern my brother's *hirundo hyberna* in Scopoli's new discovered *hirundo rupestris*, p. 167. His description of "*Supra murina, subtus albida; rectrices maculâ ovali albâ in latere interno; pedes nudi, nigri; rostrum nigrum; remiges obscuriores quam plumæ dorsales; rectrices remigibus concolores; caudâ emarginatâ, nec forcipatâ,*" agrees very well with the bird in question: but when he comes to advance that it is "*statura hirundinis urbicæ,*" and that "*definitio hirundinis ripariæ Linnæi huic quoque conveniit,*" he in some measure invalidates all he has said; at least, he shows at once that he compares them to these species merely from memory: for I have compared the birds themselves, and find they differ widely in every circumstance of shape, size, and colour. However, as you will have a specimen, I shall be glad to hear what your judgment is in the matter.

Whether my brother is forestalled in his non-descript or not, he will have the credit of first discovering that they spend their winters under the warm and sheltry shores of Gibraltar and Barbary.

Scopoli's characters of his ordines and genera are clear, just, and expressive, and much in the spirit of Linnæus. These few remarks are the result of my first perusal of Scopoli's "Annus Primus."

The bane of our science is the comparing one animal to the other by memory; for want of caution in this particular Scopoli falls into errors; he is not so full with regard to the manners of his indigenous birds as might be wished, as you justly observe; his Latin is easy, elegant, and expressive, and very superior to Kramer's.

I am pleased to see that my description of the moose corresponds so well with yours.

I am, etc.

LETTER XXXIII.

SELBORNE, *Nov. 26th, 1770.*

DEAR SIR,—I was much pleased to see, among the collection of birds from Gibraltar, some of those short-winged English summer birds of passage, concerning whose departure we have made so much inquiry. Now if these birds are found in Andalusia to migrate to and from Barbary, it may easily be supposed that those that come to us may migrate back to the

continent, and spend their winters in some of the warmer parts of Europe. This is certain, that many soft-billed birds that come to Gibraltar appear there only in spring and autumn, seeming to advance in pairs towards the northward for the sake of breeding during the summer months, and retiring in parties and broods towards the south at the decline of the year; so that the rock of Gibraltar is the great rendezvous and place of observation, from whence they take their departure each way towards Europe or Africa. It is therefore no mean discovery, I think, to find that our small short-winged summer birds of passage are to be seen spring and autumn on the very skirts of Europe; it is presumptive proof of their emigrations.

Scopoli seems to me to have found the *hirundo melba*, the great Gibraltar swift, in Tirol, without knowing it. For what is his *hirundo alpina* but the afore-mentioned bird in other words? Says he, "*Omnia prioris*" (meaning the swift); "*sed pectus album; paulo major priore.*" I do not suppose this to be a new species. It is true also of the *melba*, that "*nidificat in excelsis Alpium rupibus.*" *Vid. Annum Primum.*

My Sussex friend, a man of observation and good sense, but no naturalist, to whom I applied on account of the stone-curlew, *cedicnemus*, sends me the following

account: "In looking over my Naturalist's Journal for the month of April, I find the stone-curlews are first mentioned on the seventeenth and eighteenth, which date seems to me rather late. They live with us all the spring and summer, and at the beginning of autumn prepare to take leave by getting together in flocks. They seem to me a bird of passage that may travel into some dry, hilly country south of us, probably Spain, because of the abundance of sheep-walks in that country; for they spend their summers with us in such districts. This conjecture I hazard, as I have never met with any one that has seen them in England in the winter. I believe they are not fond of going near the water, but feed on earth-worms, that are common on sheep-walks and downs. They breed on fallows and lay-fields abounding with grey mossy flints, which much resemble their young in colour, among which they skulk and conceal themselves. They make no nest, but lay their eggs on the bare ground, producing in common but two at a time. There is reason to think their young run soon after they are hatched, and that the old ones do not feed them, but only lead them about at the time of feeding, which, for the most part, is in the night." Thus far, my friend.

In the manners of this bird you see there is something very analogous to the bustard whom it also

somewhat resembles in aspect and make, and in the structure of its feet.

For a long time I have desired my relation to look out for these birds in Andalusia, and now he writes me word that, for the first time, he saw one dead in the market on the 3rd September.

When the *cedicnemus* flies it stretches out its legs straight behind, like a heron.

I am, etc.

LETTER XXXIV.

SELBORNE, *March 30th*, 1771.

DEAR SIR,—There is an insect with us, especially on chalky districts, which is very troublesome and teasing all the latter end of the summer, getting into people's skins, especially those of women and children, and raising tumours which itch intolerably. This animal (which we call a harvest bug) is very minute, scarce discernible to the naked eye, of a bright scarlet colour, and of the genus of *Acarus*. They are to be met with in gardens on kidney-beans, or any legumens, but prevail only in the hot months of summer. Warreners, as some have assured me, are much infested by them on chalky downs, where these insects swarm some-

times to so infinite a degree as to discolour their nets, and to give them a reddish cast, while the men are so bitten as to be thrown into fevers.

There is a small, long, shining fly in these parts very troublesome to the housewife, by getting into the chimneys, and laying its eggs in the bacon while it is drying; these eggs produce maggots called jumpers, which, harbouring in the gammons and best parts of the hogs, eat down to the bone, and make great waste. This fly I suspect to be a variety of the *musca putris* of Linnæus; it is to be seen in the summer in farm-kitchens on the bacon-racks and about the mantel-pieces, and on the ceilings.

The insect that infests turnips and many crops in the garden (destroying often whole fields while in their seedling leaves) is an animal that wants to be better known. The country people here call it the turnip-fly and black-dolphin; but I know it to be one of the *coleoptera*; the "*chrysomela oleracea, saltatoria, femoribus posticis crassissimis*." In very hot summers they abound to an amazing degree, and, as you walk in a field or in a garden, make a pattering like rain, by jumping on the leaves of the turnips or cabbages.

There is an oestrus, known in these parts to every ploughboy, which, because it is omitted by Linnæus, is also passed over by late writers; and that is the *curvicauda* of old Mouset, mentioned by Derham in his

“Physico-Theology,” p. 250; an insect worthy of remark for depositing its eggs as it flies in so dextrous a manner on the single hairs of the legs and flanks of grass-horses. But then Derham is mistaken when he advances that this oestrus is the parent of that wonderful star-tailed maggot which he mentions afterwards; for more modern entomologists have discovered that singular production to be derived from the egg, or the *musca chamæleon*; see Geoffroy, t. xvii. f. 4.

A full history of noxious insects hurtful in the field, garden, and house, suggesting all the known and likely means of destroying them, would be allowed by the public to be a most useful and important work. What knowledge there is of this sort lies scattered, and wants to be collected; great improvements would soon follow, of course. A knowledge of the properties, economy, propagation, and, in short, of the life and conversation of these animals, is a necessary step to lead us to some method of preventing their depredations.

As far as I am a judge, nothing would recommend entomology more than some neat plates that should well express the generic distinctions of insects according to Linnæus; for I am well assured that many people would study insects, could they set out with a more adequate notion of those distinctions than can be conveyed at first by words alone.

LETTER XXXV.

SELBORNE, 1771.

DEAR SIR,—Happening to make a visit to my neighbour's peacocks, I could not help observing that the trains of those magnificent birds appear by no means to be their tails, those long feathers growing not from their *uropygium*, but all up their backs. A range of short brown stiff feathers, about six inches long, fixed in the *uropygium*, is the real tail, and serves as the *fulcrum* to prop the train, which is long and top-heavy, when set on end. When the train is up, nothing appears of the bird before but its head and neck; but this would not be the case were those long feathers fixed only in the rump, as may be seen by the turkey cock when in a strutting attitude. By a strong muscular vibration these birds can make the shafts of their long feathers clatter like the swords of a sword-dancer; they then trample very quick with their feet, and run backwards towards the females.

I should tell you that I have got an uncommon *calculus ægogropila*, taken out of the stomach of a fat ox; it is perfectly round, and about the size of a large Seville orange; such are, I think, usually flat.

LETTER XXXVI.

Sept., 1771.

DEAR SIR,—The summer through I have seen but two of that large species of bat which I call *vespertilio altivolans*, from its manner of feeding high in the air; I procured one of them, and found it to be a male, and made no doubt, as they accompanied together, that the other was a female; but, happening in an evening or two to procure the other likewise, I was somewhat disappointed, when it appeared to be also of the same sex. This circumstance, and the great scarcity of this sort, at least in these parts, occasions some suspicions in my mind whether it is really a species, or whether it may not be the male part of the more known species, one of which may supply many females, as is known to be the case in sheep and some other quadrupeds. But this doubt can only be cleared by a farther examination, and some attention to the sex, of more specimens: all that I know at present is, that my two were amply furnished with the parts of generation, much resembling those of a boar.

In the extent of their wings they measured fourteen inches and a half, and four inches and a half from the nose to the tip of the tail; their heads were large, their nostrils bilobated, their shoulders broad and muscular,

and their whole bodies fleshy and plump: Nothing could be more sleek and soft than their fur, which was of a bright chestnut colour; their maws were full of food, but so macerated that the quality could not be distinguished; their livers, kidneys, and hearts were large, and their bowels covered with fat. They weighed each, when entire, full one ounce and one drachm. Within the ear there was somewhat of a peculiar structure that I did not understand perfectly! but refer it to the observation of the curious anatomist, These creatures sent forth a very rancid and offensive smell.

LETTER XXXVII.

SELBORNE, 1771.

DEAR SIR,—On the 12th July I had a fair opportunity of contemplating the motions of the *caprimulgus*, or fern-owl, as it was playing round a large oak that swarmed with *scarabæi solstitiales*, or fern-chafers. The powers of its wing were wonderful, exceeding, if possible, the various evolutions and quick turns of the swallow genus. But the circumstance that pleased me most was, that I saw it distinctly, more than once, put out its short leg while on the wing, and, by a bend of the head, deliver somewhat into its mouth. If it takes

any part of its prey with its foot, as I have now the greatest reason to suppose it does these chafers, I no longer wonder at the use of its middle toe, which is curiously furnished with a serrated claw.

Swallows and martins, the bulk of them I mean, have forsaken us sooner this year than usual; for on September 22nd they rendezvoused in a neighbour's walnut-tree, where it seemed probable they had taken up their lodging for the night. At the dawn of the day, which was foggy, they arose all together in infinite numbers, occasioning such a rushing from the strokes of their wings against the hazy air, as might be heard to a considerable distance: since that no flock has appeared, only a few stragglers.

Some swifts stayed late, till the 22nd August—a rare instance! for they usually withdraw within the first week.

On September 24th three or four ring-ousels appeared in my fields for the first time this season; how punctual are these visitors in their autumnal and spring migrations!

LETTER XXXVIII.

SELBORNE, *March 15th, 1773.*

DEAR SIR,—By my journal for last autumn it appears that the house-martins bred very late, and stayed very late in these parts; for, on the 1st October, I saw young martins in their nest nearly fledged; and again, on the 21st October, we had at the next house a nest full of young martins just ready to fly; and the old ones were hawking for insects with great alertness. The next morning the brood forsook their nest, and were flying round the village. From this day I never saw one of the swallow kind till November 3rd, when twenty, or perhaps thirty, house-martins were playing all day long by the side of the hanging wood, and over my field. Did these small weak birds, some of which were nestling twelve days ago, shift their quarters at this late season of the year to the other side of the northern tropic? Or rather, is it not more probable that the next church, ruin, chalk-cliff, steep covert, or perhaps sandbank, lake, or pool (as a more northern naturalist would say), may become their *hybernaculum*, and afford them a ready and obvious retreat?

We now begin to expect our vernal migration of ring-ousels every week. Persons worthy of credit assure me that ring-ousels were seen at Christmas,

1770, in the forest of Bere, on the southern verge of this county. Hence we may conclude that their migrations are only internal, and not extending to the continent southward, if they do at first come at all from the northern parts of this island only, and not from the north of Europe. Come from whence they will, it is plain, from the fearless disregard that they show for men or guns, that they have been little accustomed to places of much resort. Navigators mention that in the Isle of Ascension, and other such desolate districts, birds are so little acquainted with the human form that they settle on men's shoulders, and have no more dread of a sailor than they would have of a goat that was grazing. A young man at Lewes, in Sussex, assured me that about seven years ago ring-ousels abounded so about that town in the autumn that he killed sixteen himself in one afternoon; he added further, that some had appeared since in every autumn, but he could not find that any had been observed before the season in which he shot so many. I myself have found these birds in little parties in the autumn cantoned all along the Sussex downs, wherever there were shrubs and bushes, from Chichester to Lewes, particularly in the autumn of 1770.

I am, etc.

LETTER XXXIX.

SELBORNE, Nov. 9th, 1773.

DEAR SIR,—As you desire me to send you such observations as may occur, I take the liberty of making the following remarks, that you may, according as you think me right or wrong, admit or reject what I here advance, in your intended new edition of the “British Zoology.”

The osprey was shot about a year ago at Frinsham Pond, a great lake, at about six miles from hence, while it was sitting on the handle of a plough and devouring a fish: it used to precipitate itself into the water, and so take its prey by surprise.

A great ash-coloured butcher-bird was shot last winter in Tisted Park, and a red-backed butcher-bird [shrike] at Selborne: they are *raras aves* in this county.

Crows go in pairs all the year round.

Cornish choughs abound, and breed on Beachy Head, and on all the cliffs of the Sussex coast.

The common wild pigeon, or stock-dove, is a bird of passage in the south of England, seldom appearing till towards the end of November; is usually the latest winter-bird of passage. Before our beechen woods were so much destroyed we had myriads of them,

reaching in strings for a mile together as they went out in a morning to feed. They leave us early in spring : where do they breed ?

The people of Hampshire and Sussex call the missel-bird the storm-cock, because it sings early in the spring in blowing, showery weather ; its song often commences with the year : with us it builds much in orchards.

A gentleman assures me he has taken the nests of ring-ousels on Dartmoor : they build in banks on the sides of streams.

Titlarks not only sing sweetly as they sit on trees, but also as they play and toy about on the wing, and particularly while they are descending, and sometimes they stand on the ground.

Adanson's testimony seems to me to be a very poor evidence that European swallows migrate during our winter to Senegal : he does not talk at all like an ornithologist ; and probably saw only the swallows of that country, which I know build within Governor O'Hara's hall against the roof. Had he known European swallows, would he not have mentioned the species ?

The house-swallow washes by dropping into the water as it flies : this species appears commonly about a week before the house-martin, and about ten or twelve days before the swift.

In 1772 there were young house-martins in their nest till October 23rd.

The swift appears about ten or twelve days later than the house-swallow: viz., about the 24th or 26th April.

Whin-chats and stone-chatters stay with us the whole year.

Some wheat-ears continue with us the winter through.

Wag-tails, all sorts, remain with us all the winter.

Ballfinches, when fed on hempseed, often become wholly black.

We have vast flocks of female chaffinches all the winter, with hardly any males among them.

When you say that in breeding-time the cock snipes make a bleating noise, and I a drumming (perhaps I should rather have said a humming), I suspect we mean the same thing. However, while they are playing about on the wing they certainly make a loud piping with their mouths: but whether that bleating or humming is ventriloquous, or proceeds from the motion of their wings, I cannot say; but this I know, that when this noise happens, the bird is always descending, and his wings are violently agitated.

Soon after the lapwings have done breeding they congregate, and, leaving the moors and marshes, betake themselves to downs and sheep-walks.

Two years ago last spring the little auk was found alive and unhurt, but fluttering and unable to rise, in a lane a few miles from Alresford, where there is a great lake : it was kept awhile, but died.

I saw young teals taken alive in the ponds of Wolmer Forest in the beginning of July last, along with flappers, or young wild ducks.

Speaking of the swift, that page says "its drink the dew;" whereas it should be "it drinks on the wing;" for all the swallow kind sip their water as they sweep over the face of pools or rivers: like Virgil's bees, they drink flying; "*flumina summa libant.*" In this method of drinking perhaps this genus may be peculiar.

Of the sedge-bird, be pleased to say it sings most part of the night; its notes are hurrying, but not unpleasing, and imitative of several birds; as the sparrow, swallow, skylark. When it happens to be silent in the night, by throwing a stone or clod into the bushes where it sits you immediately set it a-singing; or, in other words, though it slumbers sometimes, yet as soon as it is awakened it reassumes its song.

LETTER XL.

SELBORNE, Sept. 2nd, 1774.

DEAR SIR,—Before your letter arrived, and of my own accord, I had been remarking and comparing the tails of the male and female swallow, and this ere any young broods appeared; so that there was no danger of confounding the dams with their *pulli*: and besides, as they were then always in pairs, and busied in the employ of nidification, there could be no room for mistaking the sexes, nor the individuals of different chimneys the one for the other. From all my observations, it constantly appeared that each sex has the long feathers in its tail that give it that forked shape; with this difference, that they are longer in the tail of the male than in that of the female.

Nightingales, when their young first come abroad and are helpless, make a plaintive and a jarring noise, and also a snapping or cracking, pursuing people along the hedges as they walk; these last sounds seem intended for menace and defiance.

The grasshopper-lark chirps all night in the height of summer.

Swans turn white the second year, and breed the third.

Weasels prey on moles, as appears by their being sometimes caught in mole-traps.

Sparrow-hawks sometimes breed in old crows' nests, and the kestrel in churches and ruins.

There are supposed to be two sorts of eels in the island of Ely. The threads sometimes discovered in eels are perhaps their young : the generation of eels is very dark and mysterious.

Hen-harriers breed on the ground, and seem never to settle on trees.

When redstarts shake their tails they move them horizontally, as dogs do when they fawn : the tail of a wagtail, when in motion, bobs up and down like that of a jaded horse.

Hedge-sparrows have a remarkable flirt with their wings in breeding-time ; as soon as frosty mornings come they make a very piping, plaintive noise.

Many birds, which become silent about Midsummer, reassume their notes again in September, as the thrush, blackbird, woodlark, willow-wren, etc. ; hence August is by much the most mute month, the spring, summer, and autumn through. Are birds induced to sing again because the temperament of autumn resembles that of spring ?

Linnaeus ranges plants geographically ; palms inhabit the tropics, grasses the temperate zones, and mosses and lichens the polar circles ; no doubt animals may be classed in the same manner with propriety.

House-sparrows build under eaves in the spring ; as

the weather becomes hotter, they get out for coolness, and nest in plum-trees and apple-trees. These birds have been known sometimes to build in rooks' nests, and sometimes in the forks of boughs under rooks' nests.

As my neighbour was housing a rick, he observed that his dogs devoured all the little red mice that they could catch, but rejected the common mice; and that his cats ate the common mice, refusing the red.

Redbreasts sing all through the spring, summer, and autumn. The reason that they are called autumn songsters is, because in the two first seasons their voices are drowned and lost in the general chorus; in the latter their song becomes distinguishable. Many songsters of the autumn seem to be the young cock redbreasts of that year: notwithstanding the prejudices in their favour, they do much mischief in gardens to the summer fruits.

The titmouse, which early in February begins to make two quaint notes, like the whetting of a saw, is the marsh titmouse; the great titmouse sings with three cheerful, joyous notes, and begins about the same time.

Wrens sing all the winter through, frost excepted.

House-martins came remarkably late this year both in Hampshire and Devonshire. Is this circumstance for or against either hiding or migration?

Most birds drink sipping at intervals; but pigeons take a long continued draught, like quadrupeds.

Notwithstanding what I have said in a former letter, no grey crows were ever known to breed on Dartmoor; it was my mistake.

The appearance and flying of the *Scarabæus solstitialis*, or fern-chafer, commence with the month of July, and cease about the end of it. These scarabs are the constant food of *Caprimulgi*, or fern-owls, through that period. They abound on the chalky downs and in some sandy districts, but not in the clays.

In the garden of the Black Bear inn in the town of Reading, is a stream or canal running under the stables and out into the fields on the other side of the road. In this water are many carps, which lie rolling about in sight, being fed by travellers, who amuse themselves by tossing them bread; but as soon as the weather grows at all severe these fishes are no longer seen, because they retire under the stables, where they remain till the return of spring. Do they lie in a torpid state? If they do not, how are they supported?

The note of the whitethroat, which is continually repeated, and often attended with odd gesticulations on the wing, is harsh and displeasing. These birds seem of a pugnacious disposition, for they sing with an erected crest and attitudes of rivalry and defiance; are

shy and wild in breeding-time, avoiding neighbourhoods, and haunting lonely lanes and commons; nay, even the very tops of the Sussex Downs, where there are bushes and covert, but in July and August they bring their broods into gardens and orchards, and make great havoc among the summer fruits.

The blackcap has in common a full, sweet, deep, loud, and wild pipe; yet that strain is of short continuance, and his motions are desultory; but when that bird sits calmly and engages in song in earnest, he pours forth very sweet but inward melody, and expresses great variety of soft and gentle modulations, superior perhaps to those of any of our warblers, the nightingale excepted.

Blackcaps mostly haunt orchards and gardens; while they warble their throats are wonderfully distended.

The song of the redstart is superior, though somewhat like that of the whitethroat; some birds have a few more notes than others. Sitting very placidly on the top of a tall tree in a village, the cock sings from morning to night. He affects neighbourhoods, and avoids solitude, and loves to build in orchards and about houses; with us he perches on the vane of a tall maypole.

The fly-catcher is, of all our summer birds, the most mute and the most familiar; it also appears the last

of any. It builds in a vine, or a sweetbriar, against the wall of a house, or in the hole of a wall, or on the end of a beam or plate, and often close to the post of a door where people are going in and out all day long. This bird does not make the least pretension to song, but uses a little inward wailing note when it thinks its young in danger from cats or other annoyances; it breeds but once, and retires early.

Selborne parish alone can and has exhibited at times more than half the birds that are ever seen in all Sweden; the former has produced more than one hundred and twenty species, the latter only two hundred and twenty-one. Let me add, also, that it has shown near half the species that were ever known in Great Britain.

On a retrospect, I observe that my long letter carries with it a quaint and magisterial air, and is very sententious; but when I recollect that you requested stricture and anecdote, I hope you will pardon the didactic manner for the sake of the information it may happen to contain.

LETTER XLI.

IT is matter of curious inquiry to trace out how those species of soft-billed birds that continue with us the winter through subsist during the dead months. The imbecility of birds seems not to be the only reason why they shun the rigour of our winters; for the robust wryneck (so much resembling the hardy race of wood-peckers) migrates, while the feeble little golden-crowned wren, that shadow of a bird, braves our severest frosts without availing himself of houses or villages, to which most of our winter birds crowd in distressful seasons, while this keeps aloof in fields and woods; but perhaps this may be the reason why they may often perish, and why they are almost as rare as any bird we know.

I have no reason to doubt but that the soft-billed birds, which winter with us, subsist chiefly on insects in their aurelia state. All the species of wagtails in severe weather haunt shallow streams near their spring-heads, where they never freeze, and, by wading, pick out the aurelias of the genus of *Phryganææ*, etc.

Hedge-sparrows frequent sinks and gutters in hard weather, where they pick up crumbs and other sweepings, and in mild weather they procure worms, which are stirring every month in the year, as any one

may see that will only be at the trouble of taking a candle to a grass-plot on any mild winter's night. Redbreasts and wrens in the winter haunt outhouses, stables, and barns, where they find spiders and flies that have laid themselves up during the cold season. But the grand support of the soft-billed birds in winter is that infinite profusion of aurelia of the *Lepidoptera ordo*, which is fastened to the twigs of trees and their trunks, to the pales and walls of gardens and buildings, and is found in every cranny and cleft of rock or rubbish, and even in the ground itself.

Every species of titmouse winters with us; they have what I call a kind of intermediate bill between the hard and the soft, between the Linnæan genera of *Fringilla* and *Motacilla*. One species alone spends its whole time in the woods and fields, never retreating for succour in the severest seasons to houses and neighbourhoods; and that is the delicate long-tailed titmouse, which is almost as minute as the golden-crowned wren; but the blue titmouse or nun (*Parus cæruleus*), the cole-mouse (*Parus ater*), the great black-headed titmouse (*Fringillago*), and the marsh titmouse (*Parus palustris*), all resort at times to buildings, and in hard weather particularly. The great titmouse, driven by stress of weather, much frequents houses; and, in deep snows, I have seen this bird, while it hung with its back downwards (to my no

small delight and admiration), draw straws lengthwise from out the eaves of thatched houses, in order to pull out the flies that were concealed between them, and that in such numbers that they quite defaced the thatch, and gave it a ragged appearance.

The blue titmouse, or nun, is a great frequenter of houses, and a general devourer. Besides insects, it is very fond of flesh, for it frequently picks bones on dunghills: it is a vast admirer of suet, and haunts butchers' shops. When a boy, I have known twenty in a morning caught with snap mouse-traps, baited with tallow or suet. It will also pick holes in apples left on the ground, and be well entertained with the seeds on the head of a sunflower. The blue, marsh, and great titmice will, in very severe weather, carry away barley and oat-straws from the sides of ricks.

How the wheatear and whinchat support themselves in winter cannot be so easily ascertained, since they spend their time on wild heaths and warrens; the former especially, where there are stone quarries: most probably it is that their maintenance arises from the aureliæ of the *Lepidoptera ordo*, which furnish them with a plentiful table in the wilderness.

I am, etc.

LETTER XLII.

SELBORNE, *March 9th*, 1775.

DEAR SIR,—Some future faunist, a man of fortune, will, I hope, extend his visits to the kingdom of Ireland; a new field and a country little known to the naturalist. He will not, it is to be wished, undertake that tour unaccompanied by a botanist, because the mountains have scarcely been sufficiently examined; and the southerly counties of so mild an island may possibly afford some plants little to be expected within the British dominions. A person of a thinking turn of mind will draw many just remarks from the modern improvements of that country, both in arts and agriculture, where premiums obtained long before they were heard of with us. The manners of the wild natives, their superstitions, their prejudices, their sordid way of life, will extort from him many useful reflections. He should also take with him an able draughtsman, for he must by no means pass over the noble castles and seats, the extensive and picturesque lakes and waterfalls, and the lofty stupendous mountains, so little known, and so engaging to the imagination when described and exhibited in a lively manner; such a work would be well received.

As I have seen no modern map of Scotland, I

cannot pretend to say how accurate or particular any such may be ; but this I know, that the best old maps of that kingdom are very defective.

The great obvious defect that I have remarked in all maps of Scotland that have fallen in my way is a want of a coloured line, or stroke, that shall exactly define the just limits of that district called the Highlands. Moreover, all the great avenues to that mountainous and romantic country want to be well distinguished. The military roads formed by General Wade are so great and Roman-like an undertaking that they well merit attention. My old map, Moll's Map, takes notice of Fort William, but could not mention the other forts that have been erected long since ; therefore a good representation of the chain of forts should not be omitted.

The celebrated zigzag up the Coryarich must not be passed over. Moll takes notice of Hamilton and Drumlanrig, and such capital houses ; but a new survey, no doubt, should represent every seat and castle remarkable for any great event, or celebrated for its paintings, etc. Lord Breadalbane's seat and beautiful *policy* are too curious and extraordinary to be omitted.

The seat of the Earl of Eglington, near Glasgow, is worthy of notice. The pine plantations of that nobleman are very grand and extensive indeed.

I am, etc.

LETTER XLIII.

A PAIR of honey-buzzards, *Buteo opivorus*, sive *Vespi-vorus Raii*, built them a large shallow nest, composed of twigs and lined with dead beechen leaves, upon a tall, slender beech near the middle of Selborne Hanger, in the summer of 1780. In the middle of the month of June a bold boy climbed this tree though standing on so steep and dizzy a situation, and brought down an egg, the only one in the nest, which had been sat on for some time, and contained the embryo of a young bird. The egg was smaller, and not so round as those of the common buzzard; was dotted at each end with small red spots, and surrounded in the middle with a broad bloody zone.

The hen bird was shot, and answered exactly to Mr. Ray's description of that species; had a black cere, short thick legs, and a long tail. When on the wing this species may be easily distinguished from the common buzzard by its hawk-like appearance, small head, wings not so blunt, and longer tail. This specimen contained in its craw some limbs of frogs and many grey snails without shells. The irides of the eyes of this bird were of a beautiful bright yellow colour.

About the 10th July in the same summer a pair of sparrow-hawks bred in an old crow's nest on a low

beech in the same hanger ; and as their brood, which was numerous, began to grow up, became so daring and ravenous, that they were a terror to all the dames in the village that had chickens or ducklings under their care. A boy climbed the tree, and found the young so fledged that they all escaped from him, but discovered that a good house had been kept: the larder was well-stored with provisions, for he brought down a young blackbird, jay, and house-martin, all clean picked, and some half devoured. The old birds had been observed to make sad havoc for some days among the new-flown swallows and martins, which, being but lately out of their nests, had not acquired those powers and command of wing that enable them, when more mature, to set such enemies at defiance.

LETTER XLIV.

SELBORNE, Nov. 30th, 1780.

DEAR SIR,—Every incident that occasions a renewal of our correspondence will ever be pleasing and agreeable to me.

As to the wild wood-pigeon, the *Columba*, or *Vinago*, of Ray, I am much of your mind, and see no reason for making it the origin of the common house-dove: but

suppose those that have advanced that opinion may have been misled by another appellation, often given to the *Cenas*, which is that of stock-dove.

Unless the stock-dove in the winter varies greatly in manners from itself in summer, no species seems more unlikely to be domesticated, and to make a house-dove. We very rarely see the latter settle on trees at all, nor does it ever haunt the woods; but the former, as long as it stays with us, from November perhaps to February, lives the same wild life with the ring-dove, *Palumbus torquatus*; frequents coppices and groves, supports itself chiefly by mast, and delights to roost in the tallest beeches. Could it be known in what manner stock-doves build, the doubt would be settled with me at once, provided they construct their nests on trees, like the ring-dove, as I much suspect they do.

You received, you say, last spring a stock-dove from Sussex, and are informed that they sometimes breed in that county. But why did not your correspondent determine the place of its nidification, whether on rocks, cliffs, or trees? If he was not an adroit ornithologist I should doubt the fact, because people with us perpetually confound the stock-dove with the ring-dove.

For my own part, I readily concur with you in supposing that house-doves are derived from the small blue rock-pigeon, for many reasons. In the first place the wild stock-dove is manifestly larger than the

common house-dove, against the usual rule of domestication, which generally enlarges the breed. Again, those two remarkable black spots on the remiges of each wing of the stock-dove, which are so characteristic of the species, would not, one should think, be totally lost by its being reclaimed, but would often break out among its descendants. But what is worth a hundred arguments is, the instance you give in Sir Roger Mostyn's house-doves in Cærnarvonshire; which, though tempted by plenty of food and gentle treatment, can never be prevailed on to inhabit their cote for any time; but as soon as they begin to breed, betake themselves to the fastnesses of Ormshead, and deposit their young in safety amidst the inaccessible caverns and precipices of that stupendous promontory.

“*Naturam expellas furcâ . . . tamen usque recurret.*”

I have consulted a sportsman, now in his seventy-eighth year, who tells me that fifty or sixty years back, when the beechen woods were much more extensive than at present, the number of wood-pigeons was astonishing; that he has often killed near twenty in a day, and that with a long wild-fowl piece he has shot seven or eight at a time on the wing as they came wheeling over his head: he moreover adds, which I was not aware of, that often there were among them little parties of small blue doves, which he calls

rockiers. The food of these numberless emigrants was beech-mast and some acorns, and particularly barley, which they collected in the stubbles. But of late years, since the vast increase of turnips, that vegetable has furnished a great part of their support in hard weather; and the holes they pick in these roots greatly damage the crop. From this food their flesh has contracted a rancidness which occasions them to be rejected by nicer judges of eating, who thought them before a delicate dish. They were shot not only as they were feeding in the fields, and especially in snowy weather, but also at the close of the evening, by men who lay in ambush among the woods and groves to kill them as they came in to roost. These are the principal circumstances relating to this wonderful internal migration, which with us takes place towards the end of November, and ceases early in the spring. Last winter we had in Selborne high wood about a hundred of these doves; but in former times the flocks were so vast, not only with us but all the district round, that on mornings and evenings they traversed the air, like rooks, in strings, reaching for a mile together. When they thus rendezvoused here by thousands, if they happened to be suddenly roused from their roost-trees on an evening,

“Their rising all at once was like the sound
Of thunder heard remote.”——

It will by no means be foreign to the present purpose to add, that I had a relation in this neighbourhood who made it a practice, for a time, whenever he could procure the eggs of a ring-dove, to place them under a pair of doves that were sitting in his own pigeon-house ; hoping thereby, if he could bring about a coalition, to enlarge his breed, and teach his own doves to beat out into the woods, and to support themselves by mast ; the plan was plausible, but something always interrupted the success ; for though the birds were usually hatched, and sometimes grew to half their size, yet none ever arrived at maturity. I myself have seen these foundlings in their nest displaying a strange ferocity of nature, so as scarcely to bear to be looked at, and snapping with their bills by way of menace. In short, they always died, perhaps for want of proper sustenance : but the owner thought that by their fierce and wild demeanour they frightened their foster mothers, and so were starved.

Virgil, as a familiar occurrence, by way of simile, describes a dove haunting the cavern of a rock in such engaging numbers, that I cannot refrain from quoting the passage : and John Dryden has rendered it so happily in our language, that without further excuse I shall add his translation also.

“Qualis speluncâ subito commota Columba,
Cui domus, et dulces latebroso in pumice nidi,

Fertur in arva volans, plausumque exterrita pennis,
Dat tecto ingentem—mox aere lapsa quieto,
Radit iter liquidum, celeres neque commovet alas.”

“As when a dove her rocky hold forsakes,
Rous'd, in a fright her sounding wings she shakes ;
The cavern rings with clattering :—out she flies,
And leaves her callow care, and cleaves the skies :
At first she flutters :—but at length she springs
To smoother flight, and shoots upon her wings.”
I am, etc.

LETTERS TO THE HON. DAINES BARRINGTON.

LETTER I.

SELBORNE, *June 30th*, 1769.

DEAR SIR,—When I was in town last month I partly engaged that I would sometimes do myself the honour to write to you on the subject of natural history ; and I am the more ready to fulfil my promise, because I see you are a gentleman of great candour, and one that will make allowances, especially where the writer professes to be an out-door naturalist, one that takes his observations from the subject itself, and not from the writings of others.

THE FOLLOWING IS A LIST OF THE SUMMER BIRDS OF PASSAGE WHICH I HAVE DISCOVERED IN THIS NEIGHBOURHOOD, RANGED SOMEWHAT IN THE ORDER IN WHICH THEY APPEAR :—

	RAII NOMINA.	USUALLY APPEARS ABOUT
1. Wryneck,	{ <i>Jynx</i> , sive <i>Tor-</i> <i>quilla</i> .	{ The middle of March : harsh note.
2. Smallest wil- low-wren,	{ <i>Regulus non cris-</i> <i>tatus</i> .	{ March 23rd : chirps till September.
3. Swallow,	{ <i>Hirundo domes-</i> <i>tica</i> .	{ April 13th.
4. Martin,	<i>Hirundo rustica</i> .	Ditto

- | | | |
|----------------------------------|-------------------------------------------------|----------------------------------------------------------------------------------------------------|
| 5. Sand-martin, | <i>Hirundo riparia.</i> | Ditto. |
| 6. Blackcap, | <i>Atricapilla.</i> | { Ditto : a sweet, wild note. |
| 7. Nightingale, | <i>Luscinia.</i> | { Beginning of April. |
| 8. Cuckoo, | <i>Cuculus.</i> | { Middle of April. |
| 9. Middle wil-
low-wren, | { <i>Regulus non cris-</i>
<i>tatus.</i> | { Ditto : a sweet, plain-
tive note. |
| 10. Whitethroat | <i>Ficedulæ affinis.</i> | { Ditto : mean note ; sings
on till September. |
| 11. Redstart, | <i>Ruticilla.</i> | { Ditto : more agreeable
song. |
| 12. Stone-Curlew | <i>Edicnemus.</i> | { End of March : loud
nocturnal whistle. |
| 13. Turtle-dove, | <i>Turtur.</i> | |
| 14. Grasshopper-
lark, | { <i>Alauda minima</i>
<i>locustæ voce.</i> | { Middle April : a small
sibilous note, till the
end of July. |
| 15. Swift, | <i>Hirundo apus.</i> | { About April 27th. |
| 16. Less reed-
sparrow, | { <i>Passer arundi-</i>
<i>naceus minor.</i> | { A sweet polyglot, but
hurrying ; it has the
notes of many birds. |
| 17. Land-rail, | <i>Ortygometra.</i> | { A loud, harsh note—
crex, crex. |
| 18. Largest wil-
low wren, | { <i>Regulus non cris-</i>
<i>tatus.</i> | { <i>Cantat voce stridulâ</i>
<i>locustæ</i> ; end of April,
on the tops of high
beeches. |
| 19. Goat-sucker,
or fern-owl, | { <i>Caprimulgus.</i> | { Beginning of May : chat-
ters by night with a
singular noise. |
| 20. Fly-catcher, | <i>Stoparola.</i> | { May 12th : a very mute
bird : this is the latest
summer bird of pas-
sage. |

This assemblage of curious and amusing birds belongs to ten several genera of the Linnæan system, and are all of the *ordo* of *passeres* save the *Jynx* and *Cuculus*, which are *picæ*, and the *Charadrius* (*Edicnemus*) and *Rallus* (*Ortygometra*), which are *grallæ*.

These birds, as they stand numerically, belong to the following Linnæan genera :—

1,	<i>Jynx.</i>	13. <i>Columba.</i>
2, 6, 7, 9, 10, 11, 16, 18,	<i>Motacilla.</i>	17. <i>Rallus.</i>
3, 4, 5, 15,	<i>Hirundo.</i>	19. <i>Caprimulgus.</i>
8,	<i>Cuculus.</i>	14. <i>Alauda.</i>
12,	<i>Charadrius.</i>	20. <i>Muscicapa.</i>

Most soft-billed birds live on insects, and not on grain and seeds, and therefore at the end of summer they retire : but the following soft-billed birds, though insect-eaters, stay with us the year round :—

RAII NOMINA.

Redbreast, Wren,	<i>Rubecula.</i> <i>Passer troglodytes</i>	{ These frequent houses, and haunt out-build- ings in the winter : eat spiders.
Hedge-sparrow,	<i>Curruca.</i>	
White-wagtail, Yellow-wagtail, Grey-wagtail,	<i>Motacilla alba.</i> <i>Motacilla flava.</i> <i>Motacilla cinerea.</i>	{ These frequent shallow rivulets near the spring heads, where they never freeze : eat the aureliæ of <i>Phryganea</i> . The smallest birds that walk.
Wheatear,	<i>Enanthe.</i>	
Whinchat, Stone-chatter,	<i>Enanthe secunda</i> <i>Enanthe tertia</i>	{ Some of these are to be seen with us the winter through.
Golden - crowned wren.	<i>Regulus cristatus.</i>	

This is the smallest
British bird : haunts
the tops of tall trees ;
stays the winter
through.

A LIST OF THE WINTER BIRDS OF PASSAGE ROUND THIS
NEIGHBOURHOOD, RANGED SOMEWHAT IN THE ORDER IN
WHICH THEY APPEAR.

RAII NOMINA.

1. Ring-ousel,	<i>Merula torquata.</i>	{ This is a new migration, which I have lately dis- covered about Michael- mas week, and again about the 14th March.
2. Redwing,	<i>Turdus iliacus.</i>	
3. Fieldfare,	<i>Turdus pilaris.</i>	{ Though a percher by day, roosts on the ground.
4. Royston - crow,	<i>Cornix cinerea.</i>	
5. Woodcock,	<i>Scolopax.</i>	{ Appears about old Michaelmas.
6. Snipe,	<i>Gallinago minor.</i>	{ Some snipes constantly breed with us.
7. Jack-snipe,	<i>Gallinago minima</i>	
8. Wood-pigeon,	<i>Cenas.</i>	{ Seldom appears till late; not in such plenty as formerly.
9. Wild-swan.	<i>Cygnus ferus.</i>	
10. Wild-goose,	<i>Anser ferus.</i>	{ On some large waters.
11. Wild-duck,	<i>Anas torquata</i>	
12. Pochard,	<i>minor.</i>	
13. Wigeon,	<i>Anas fera fusca.</i>	
14. Teal, breeds with us in Wol- mer Forest,	<i>Penelope.</i>	
	<i>Querquedula.</i>	{ On our lakes and streams.
15. Gross-beak,	<i>Coccothraustes.</i>	
16. Cross-bill,	<i>Loxia.</i>	{ These are only wan- derers that appear oc- asionally, and are not observant of any regu- lar migration.
17. Silk-tail,	<i>Garrulus bohe- micus.</i>	

The birds, as they stand numerically, belong to the
following Linnæan genera :—

1, 2, 3,	<i>Turdus.</i>	9, 10, 11, 12, 13, 14,	<i>Anas.</i>
4,	<i>Corvus.</i>	15, 16,	<i>Loxia.</i>
5, 6, 7,	<i>Scolopax.</i>	17,	<i>Ampelis.</i>
8,	<i>Columba.</i>		

Birds that sing in the night are but few.

Nightingale,	<i>Luscinia.</i>	{ "In shadiest covert
Woodlark,	<i>Alauda arborea.</i>	{ hid." MILTON.
Less reed-sparrow {	<i>Passer arundina-</i>	Suspended in mid air.
	<i>ceus minor.</i>	{ Among reeds and wil-
		lows.

I should now proceed to such birds as continue to sing after Midsummer, but, as they are rather numerous, they would exceed the bounds of this paper: besides, as this is now the season for remarking on that subject, I am willing to repeat my observations on some birds concerning the continuation of whose song I seem at present to have some doubt.

I am, etc.

LETTER II.

SELBORNE, Nov. 2nd, 1769.

DEAR SIR,—When I did myself the honour to write to you about the end of last June on the subject of natural history, I sent you a list of the summer birds of passage which I have observed in this neighbourhood, and also a list of the winter birds of passage: I

mentioned besides those soft-billed birds that stay with us the winter through in the south of England, and those that are remarkable for singing in the night.

According to my proposal, I shall now proceed to such birds (singing birds strictly so called) as continue in full song till after Midsummer, and shall range them somewhat in the order in which they first begin to open as the spring advances.

RATH NOMINA.

1. Woodlark,	<i>Alauda arborea.</i>	{ In January, and continues to sing through all the summer and autumn.
2. Song-thrush,	{ <i>Turdus simplici-</i> <i>ter dictus.</i>	{ In February and on to August; re-assume their song in autumn.
3. Wren,	<i>Passer troglodytes</i>	{ All the year, hard frost excepted.
4. Redbreast,	<i>Rubecula.</i>	Ditto.
5. Hedge - sparrow,	{ <i>Curruca.</i>	{ Early in February to July 10th.
6. Yellow - hammer,	{ <i>Emberiza flava.</i>	{ Early in February, and on through July to August 21st.
7. Skylark,	<i>Alauda vulgaris.</i>	{ In February and on to October.
8. Swallow,	{ <i>Hirundo domes-</i> <i>tica.</i>	{ From April to September.
9. Blackcap,	<i>Atricapilla.</i>	{ Beginning of April to July 13th.
10. Titlark,	{ <i>Alauda pratorum.</i>	{ From middle of April to July 16th.
11. Blackbird,	<i>Merula vulgaris.</i>	{ Sometimes in February and March, and so on to July 23rd; re-assumes in autumn.

- | | | | |
|------------------------|-----------------------------------|---|-----------------------------------------------------------------------------------------------------------------------------------------------|
| 12. Whitethroat, | <i>Ficedula affinis.</i> | { | In April, and on to July 23rd. |
| 13. Goldfinch, | <i>Carduelis.</i> | | April, and through to September 16th. |
| 14. Greenfinch, | <i>Chloris.</i> | { | On to July and August 2nd. |
| 15. Less reed-sparrow, | <i>Passer arundinaceus minor.</i> | | May, on to beginning of July. |
| 16. Common linnet, | <i>Linaria vulgaris.</i> | { | Breeds and whistles on till August; re-assumes its note when they begin to congregate in October, and again early before the flocks separate. |

Birds that cease to be in full song, and are usually silent at or before Midsummer:—

RAII NOMINA.

- | | | | |
|--------------------------|-------------------------------|---|---------------------------------------------|
| 17. Middle wil-low-wren, | <i>Regulus non cristatus.</i> | { | Middle of June; begins in April. |
| 18. Redstart, | <i>Buticilla.</i> | | Ditto; begins in May. |
| 19. Chaffinch, | <i>Fringilla.</i> | { | Beginning of June; sings first in February. |
| 20. Nightingale, | <i>Luscinia.</i> | | Middle of June; sings first in April. |

Birds that sing for a short time, and very early in the spring:—

RAII NOMINA.

- | | | | |
|------------------|---------------------------|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 21. Missel-bird, | <i>Turdus viscivorus.</i> | { | January 2nd, 1770, in February. Is called in Hampshire and Sussex the storm-cock, because its song is supposed to forebode windy wet weather: it is the largest singing bird we have. |
|------------------|---------------------------|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

- | | | |
|-----------------------------------------|-----------------------|-----------------------------------------------------------------------------------|
| 22. Great tit-
mouse, or ox-
eye, | } <i>Fringillago.</i> | { In February, March,
April; re-assumes for
a short time in Septem-
ber. |
|-----------------------------------------|-----------------------|-----------------------------------------------------------------------------------|

Birds that have somewhat of a note or song, and yet are hardly to be called singing birds:—

- | | | |
|------------------------------|------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| 23. Golden-
crowned wren, | } <i>Regulus cristatus.</i> | { Its note as minute as
its person; frequents
the tops of high oaks
and firs; the smallest
British bird. |
| 24. Marsh tit-
mouse, | } <i>Parus palustris.</i> | { Haunts great woods;
two harsh, sharp notes. |
| 25. Small willow-
wren, | } <i>Regulus non cris-
tatus.</i> | { Sings in March, and on
to September. |
| 26. Largest ditto, | <i>Ditto.</i> | { <i>Cantat voce stridula
locustæ</i> ; from end of
April to August. |
| 27. Grasshopper-
lark, | } <i>Alauda minima
voce locustæ.</i> | { Chirps all night, from
the middle of April to
the end of July. |
| 28. Martin, | <i>Hirundo agrestis.</i> | { All the breeding time;
from May to Septem-
ber. |
| 29. Bullfinch, | <i>Pyrrhula.</i> | |
| 30. Bunting, | <i>Emberiza albà.</i> | { From the end of January
to July. |

All singing birds, and those that have any pretensions to song, not only in Britain, but perhaps the world through, come under the Linnæan *ordo* of *Pas-seres*.

The above-mentioned birds, as they stand numerically, belong to the following Linnæan genera:—

1, 7, 10, 27,	<i>Alauda.</i>	8, 28,	<i>Hirundo.</i>
2, 11, 21,	<i>Turdus.</i>	13, 16, 19,	<i>Fringilla.</i>
3, 4, 5, 9, 12, 15, 17, }	<i>Motacilla.</i>	22, 24,	<i>Parus.</i>
18, 20, 23, 25, 26, }	<i>Emberiza.</i>	14, 29,	<i>Loxia.</i>
6, 30,			

Birds that sing as they fly are but few :—

RAII NOMINA.

Skylark,	<i>Alauda vulgaris.</i>	{ Rising, suspended, and falling.
Titlark,	<i>Alauda pratorum</i>	{ In its descent ; also sitting on trees, and walking on the ground.
Woodlark,	<i>Alauda arborea.</i>	{ Suspended ; in hot summer nights all night long.
Blackbird,	<i>Merula.</i>	{ Sometimes from bush to bush.
Whitethroat,	<i>Ficedula affinis.</i>	{ Uses when singing on the wing odd jerks and gesticulations.
Swallow,	{ <i>Hirundo domestica.</i>	{ In soft sunny weather.
Wren,	<i>Passer troglodytes</i>	{ Sometimes from bush to bush.

Birds that breed most early in these parts :—

Raven,	<i>Corvus.</i>	{ Hatches in February and March.
Song-thrush,	<i>Turdus.</i>	In March.
Blackbird,	<i>Merula.</i>	In March.
Rook,	<i>Cornix frugilega.</i>	{ Builds the beginning of March.
Woodlark,	<i>Alauda arborea.</i>	Hatches in April.
Ring-dove,	{ <i>Palumbus torquatus.</i>	{ Lays the beginning of April.

All birds that continue in full song till after Midsummer appear to me to breed more than once.

Most kinds of birds seem to me to be wild and shy

somewhat in proportion to their bulk: I mean in this island, where they are much pursued and annoyed; but in Ascension Island, and many other desolate places, mariners have found fowls so unacquainted with a human figure, that they would stand still to be taken, as is the case with boobies, etc. As an example of what is advanced, I remark that the golden-crested wren (the smallest British bird) will stand unconcerned till you come within three or four yards of it, while the bustard (*Otis*), the largest British land fowl, does not care to admit a person within so many furlongs.

I am, etc.

LETTER III.

SELBORNE, Jan. 15th, 1770.

DEAR SIR,—It was no small matter of satisfaction to me to find that you were not displeased with my little *methodus* of birds. If there was any merit in the sketch, it must be owing to its punctuality. For many months I carried a list in my pocket of the birds that were to be remarked, and, as I rode or walked about my business, I noted each day the continuance or omission of each bird's song, so that I am as sure of the certainty of my facts as a man can be of any transaction whatsoever.

I shall now proceed to answer the several queries which you put in your two obliging letters, in the best manner that I am able. Perhaps Eastwick and its environs, where you heard so very few birds, is not a woodland country, and therefore not stocked with such songsters. If you will cast your eye on my last letter, you will find that many species continued to warble after the beginning of July.

The titlark and yellow-hammer breed late, the latter very late; and therefore it is no wonder that they protract their song: for I lay it down as a maxim in ornithology, that as long as there is any incubation going on there is music. As to the redbreast and wren, it is well known to the most incurious observer that they whistle the year round, hard frost excepted—especially the latter.

It was not in my power to procure you a black-cap, or a less reed-sparrow, or sedge-bird, alive. As the first is undoubtedly, and the last, as far as I can yet see, a summer bird of passage, they would require more nice and curious management in a cage than I should be able to give them: they are both distinguished songsters. The note of the former has such a wild sweetness that it always brings to my mind those lines in a song in "As You Like It":

"And tune his merry note
Unto the *wild* bird's throat."—SHAKESPEARE.

The latter has a surprising variety of notes resembling the song of several other birds; but then it has also a hurrying manner, not at all to its advantage: it is notwithstanding a delicate polyglot.

It is new to me that titlarks in cages sing in the night; perhaps only caged birds do so. I once knew a tame redbreast in a cage that always sang as long as candles were in the room; but in their wild state no one supposes they sing in the night.

I should be almost ready to doubt the fact that there are to be seen much fewer birds in July than in any former month, notwithstanding so many young are hatched daily. Sure I am that it is far otherwise with respect to the swallow tribe, which increases prodigiously as the summer advances: and I saw at the time mentioned many hundreds of young wagtails on the banks of the Cherwell, which almost covered the meadows. If the matter appears as you say in the other species, may it not be owing to the dams being engaged in incubation, while the young are concealed by the leaves.

Many times have I had the curiosity to open the stomachs of woodcocks and snipes: but nothing ever occurred that helped to explain to me what their subsistence might be: all that I could ever find was a soft mucus, among which lay many pellucid small gravels.

I am, etc.

LETTER IV.

SELBORNE, Feb. 19th, 1770.

DEAR SIR,—Your observation that “the cuckoo does not deposit its egg indiscriminately in the nest of the first bird that comes in its way, but probably looks out a nurse in some degree congenerous with whom to intrust its young,” is perfectly new to me, and struck me so forcibly that I naturally fell into a train of thought that led me to consider whether the fact was so, and what reason there was for it. When I came to recollect and inquire, I could not find that any cuckoo had ever been seen in these parts, except in the nest of the wagtail, the hedge-sparrow, the titlark, the white-throat, and the redbreast, all soft-billed insectivorous birds. The excellent Mr. Willughby mentions the nest of the *Palumbus* (ring-dove), and of the *Fringilla* (chaffinch), birds that subsist on acorns and grains, and such hard food: but then he does not mention them as of his own knowledge, but says afterwards that he saw himself a wagtail feeding a cuckoo. It appears hardly possible that a soft-billed bird should subsist on the same food with the hard-billed: for the former have thin membranaceous stomachs suited to their soft food, while the latter, the granivorous tribe,

have strong muscular gizzards, which, like mills, grind, by the help of small gravels and pebbles, what is swallowed. This proceeding of the cuckoo, of dropping its eggs as it were by chance, is such a monstrous outrage on maternal affection, one of the first great dictates of nature, and such a violence on instinct, that, had it only been related of a bird in the Brazils, or Peru, it would never have merited our belief. But yet, should it further appear that this simple bird, when divested of that natural *στοργή* that seems to raise the kind in general above themselves, and inspire them with extraordinary degrees of cunning and address, may be still endued with a more enlarged faculty of discerning what species are suitable and congenerous nursing-mothers for its disregarded eggs and young, and may deposit them only under their care, this would be adding wonder to wonder, and instancing, in a fresh manner, that the methods of Providence are not subjected to any mode or rule, but astonish us in new lights, and in various and changeable appearances.

What was said by a very ancient and sublime writer concerning the defect of natural affection in the ostrich may be well applied to the bird we are talking of:

“She is hardened against her young ones, as though they were not hers:

“Because God hath deprived her of wisdom, neither hath He imparted to her understanding.”

Query.—Does each female cuckoo lay but one egg in a season, or does she drop several in different nests according as opportunity offers?

I am, etc.

LETTER V.

SELBORNE, *April 12th, 1770.*

DEAR SIR,—I heard many birds of several species sing last year after Midsummer, enough to prove that the summer solstice is not the period that puts a stop to the music of the woods. The yellow-hammer no doubt persists with more steadiness than any other: but the woodlark, the wren, the redbreast, the swallow, the whitethroat, the goldfinch, the common linnet, are all undoubted instances of the truth of what I advanced.

If this severe season does not interrupt the regularity of the summer migrations, the black-cap will be here in two or three days. I wish it was in my power to procure you one of those songsters; but I am no bird-catcher, and so little used to birds in a cage, that I fear if I had one it would soon die for want of skill in feeding.

Was your reed-sparrow, which you kept in a cage, the thick-billed reed-sparrow of the Zoology, p. 320; or was it the less reed-sparrow of Ray, the sedge-bird of Mr. Pennant's last publication, p. 16?

As to the matter of long-billed birds growing fatter in moderate frosts, I have no doubt within myself what should be the reason. The thriving at those times appears to me to arise altogether from the gentle check which the cold throws upon insensible perspiration. The case is just the same with blackbirds, etc.; and farmers and warreners observe, the first, that their hogs fat more kindly at such times, and the latter that their rabbits are never in such good case as in a gentle frost. But when frosts are severe, and of long continuance, the case is soon altered, for then a want of food soon overbalances the repletion occasioned by a checked perspiration. I have observed, moreover, that some human constitutions are more inclined to plumpness in winter than in summer.

When birds come to suffer by severe frost, I find that the first that fail and die are the redwing-fieldfares, and then the song-thrushes.

You wonder, with good reason, that the hedge-sparrows, etc., can be induced at all to sit on the egg of the cuckoo without being scandalised at the vast disproportionate size of the supposititious egg; but the brute creation, I suppose, have very little idea of

size, colour, or number. For the common hen, I know, when the fury of incubation is on her, will sit on a single shapeless stone instead of a nest full of eggs that have been withdrawn: and, moreover, a hen-turkey, in the same circumstances, would sit on in the empty nest till she perished with hunger.

I think the matter might easily be determined whether a cuckoo lays one or two eggs, or more, in a season, by opening a female during the laying-time. If more than one was come down out of the ovary and advanced to a good size, doubtless then she would that spring lay more than one.

I will endeavour to get a hen, and to examine.

Your supposition that there may be some natural obstruction in singing birds while they are mute, and that when this is removed the song recommences, is new and bold: I wish you could discover some good grounds for this suspicion.

I was glad you were pleased with my specimen of the caprimulgus, or fern-owl; you were, I find, acquainted with the bird before.

When we meet I shall be glad to have some conversation with you concerning the proposal you make of my drawing up an account of the animals in this neighbourhood. Your partiality towards my small abilities persuades you, I fear, that I am able to do more than is in my power: for it is no small

undertaking for a man unsupported and alone to begin a natural history from his own autopsy! Though there is endless room for observation in the field of nature, which is boundless, yet investigation (where a man endeavours to be sure of his facts) can make but slow progress; and all that one could collect in many years would go into a very narrow compass.

Some extracts from your ingenious "Investigations of the Difference between the Present Temperature of the Air in Italy," etc., have fallen in my way, and gave me great satisfaction: they have removed the objections that always arose in my mind whenever I came to the passages which you quote. Surely the judicious Virgil, when writing a didactic poem for the region of Italy, could never think of describing freezing rivers, unless such severity of weather pretty frequently occurred!

P.S.—Swallows appear amidst snows and frost.

LETTER VI.

SELBORNE, *May 21st*, 1770.

DEAR SIR,—The severity and turbulence of last month so interrupted the regular process of summer migration, that some of the birds do but just begin to

show themselves, and others are apparently thinner than usual; as the white-throat, the black-cap, the red-start, the fly-catcher. I well remember that after the very severe spring in the year 1739-40, summer birds of passage were very scarce. They come probably hither with a south-east wind, or when it blows between those points: but in that unfavourable year the winds blowed the whole spring and summer through from the opposite quarters. And yet amidst all these disadvantages two swallows, as I mentioned in my last, appeared this year as early as the 11th April amidst frost and snow; but they withdrew again for a time.

I am not pleased to find that some people seem so little satisfied with Scopoli's new publication; there is room to expect great things from the hands of that man, who is a good naturalist: and one would think that a history of the birds of so distant and southern a region as Carniola would be new and interesting. I could wish to see that work, and hope to get it sent down. Dr. Scopoli is physician to the wretches that work in the quicksilver mines of that district.

When you talked of keeping a reed-sparrow, and giving it seeds, I could not help wondering; because the reed-sparrow which I mentioned to you (*Passer arundinaceus minor Raii*) is a soft-billed bird; and most probably migrates hence before winter; whereas

the bird you kept (*Passer torquatus Raii*) abides all the year, and is a thick-billed bird. I question whether the latter be much of a songster; but in this matter I want to be better informed. The former has a variety of hurrying notes, and sings all night. Some part of the song of the former, I suspect, is attributed to the latter. We have plenty of the soft-billed sort; which Mr. Pennant had entirely left out of his "British Zoology," till I reminded him of his omission. See "British Zoology" last published, p. 16.

I have somewhat to advance on the different manners in which different birds fly and walk; but as this is a subject that I have not enough considered, and is of such a nature as not to be contained in a small space, I shall say nothing further about it at present.

No doubt the reason why the sex of birds in their first plumage is so difficult to be distinguished is, as you say, "because they are not to pair and discharge their parental functions till the ensuing spring." As colours seem to be the chief external sexual distinction in many birds, these colours do not take place till sexual attachments begin to obtain. And the case is the same in quadrupeds; among whom, in their younger days, the sexes differ but little: but, as they advance to maturity, horns and shaggy manes, beards, and brawny necks, etc., etc., strongly discriminate the male from the female. We may instance still farther

in our own species, where a beard and stronger features are usually characteristic of the male sex: but this sexual diversity does not take place in earlier life; for a beautiful youth shall be so like a beautiful girl that the difference shall not be discernible;

“Quem si puellarum insereres choro,
Mire sagaces falleret hospites
Discrimen obscurum, solutis
Crinibus, ambiguoque vultu.”

HOB. ODES, II. od. 5-21, p. 131, orig. edit.

LETTER VII.

RINGMER near LEWES, Oct. 8th, 1770.

DEAR SIR,—I am glad to hear that Kuckalm is to furnish you with the birds of Jamaica; a sight of the *hirundines* of that hot and distant island would be a great entertainment to me.

The Anni of Scopoli are now in my possession; and I have read the *Annus Primus* with satisfaction; for though some parts of this work are exceptionable, and he may advance some mistaken observations, yet the ornithology of so distant a country as Carniola is very

curious. Men that undertake only one district are much more likely to advance natural knowledge than those that grasp at more than they can possibly be acquainted with : every kingdom, every province, should have its own monographer.

The reason perhaps why he mentions nothing of Ray's Ornithology may be the extreme poverty and distance of his country into which the works of our great naturalist may have never yet found their way. You have doubts, I know, whether this Ornithology is genuine, and really the work of Scopoli ; as to myself I think I discover strong tokens of authenticity ; the style corresponds with that of his Entomology ; and his characters of his Ordines and Genera are many of them new, expressive, and masterly. He has ventured to alter some of the Linnæan genera with sufficient show of reason.

It might perhaps be mere accident that you saw so many swifts and no swallows at Staines ; because, in my long observation of those birds, I never could discover the least degree of rivalry or hostility between the species.

Ray remarks that birds of the *gallinæ* order, as cocks and hens, partridges, and pheasants, etc., are *pulveratrices*, such as dust themselves, using that method of cleansing their feathers, and ridding themselves of their vermin. As far as I can observe, many birds

that dust themselves never wash; and I once thought that those birds that wash themselves would never dust; but here I find myself mistaken: for common house-sparrows are great pulveratrices, being frequently seen grovelling and wallowing in dusty roads; and yet they are great washers. Does not the skylark dust?

Query.—Might not Mahomet and his followers take one method of purification from these pulveratrices? because I find from travellers of credit, that if a strict Mussulman is journeying in a sandy desert where no water is to be found, at stated hours he strips off his clothes, and most scrupulously rubs his body over with sand or dust.

A countryman told me he had found a young fern-owl in the nest of a small bird on the ground; and that it was fed by the little bird. I went to see this extraordinary phenomenon, and found that it was a young cuckoo hatched in the nest of a titlark; it was become vastly too big for its nest, appearing

“ in tenui re
Majores pennas nido extendisse . . . ”

and was very fierce and pugnacious, pursuing my finger as I teased it, for many feet from the nest, and sparring and buffeting with its wings like a game-cock. The dupe of a dam appeared at a distance, hovering

about with meat in its mouth, and expressing the greatest solicitude.

In July I saw several cuckoos skimming over a large pond; and found, after some observation, that they were feeding on the *Libellulæ*, or dragon-flies; some of which they caught as they settled on the weeds, and some as they were on the wing. Notwithstanding what Linnæus says, I cannot be induced to believe that they are birds of prey.

This district affords some birds that are hardly ever heard of at Selborne. In the first place considerable flocks of cross-beaks (*Loxia curvirostræ*) have appeared this summer in the pine-groves belonging to this house; the water-ouzel is said to haunt the mouth of the Lewes river, near Newhaven; and the Cornish chough builds, I know, all along the chalky cliffs of the Sussex shore.

I was greatly pleased to see little parties of ring-ouzels (my newly discovered migrators) scattered, at intervals, all along the Sussex downs, from Chichester to Lewes. Let them come from whence they will, it looks very suspicious that they are cantoned along the coast in order to pass the channel when severe weather advances. They visit us again in April, as it should seem, in their return; and are not to be found in the dead of winter. It is remarkable that they are very tame, and seem to have no manner of apprehensions of

danger from a person with a gun. There are bustards on the wide downs near Brighthelmstone. No doubt you are acquainted with the Sussex downs; the prospects and rides round Lewes are most lovely!

As I rode along near the coast I kept a very sharp look-out in the lanes and woods, hoping I might, at this time of the year, have discovered some of the summer short-winged birds of passage crowding towards the coast in order for their departure: but it was very extraordinary that I never saw a red-start, white-throat, black-cap, uncrested wren, fly-catcher, etc. And I remember to have made the same remark in former years, as I usually come to this place annually about this time. The birds most common along the coast, at present, are the stone-chatters, whinchats, buntings, linnets, some few wheatears, titlarks, etc. Swallows and house-martins abound yet, induced to prolong their stay by this soft, still, dry season.

A land tortoise, which has been kept for thirty years in a little walled court belonging to the house where I now am visiting, retires under ground about the middle of November, and comes forth again about the middle of April. When it first appears in the spring it discovers very little inclination towards food; but in the height of summer grows voracious; and then as the summer declines its appetite declines; so that for the last six weeks in autumn it hardly eats at all. Milky

plants, such as lettuces, dandelions, sowthistles, are its favourite dish. In a neighbouring village one was kept till by tradition it was supposed to be a hundred years old. An instance of vast longevity in such a poor reptile!

LETTER VIII

SELBORNE, Dec. 20th, 1770.

DEAR SIR,—The birds that I took for aberdavines were reed-sparrows (*Passeres torquati*).

There are doubtless many home internal migrations within this kingdom that want to be better understood: witness those vast flocks of hen-chaffinches that appear with us in the winter without hardly any cocks among them. Now was there a due proportion of each sex, it should seem very improbable that any one district should produce such numbers of these little birds; and much more when only one-half of the species appears; therefore we may conclude that the *Fringillæ cælebes*, for some good purposes, have a peculiar migration of their own in which the sexes part. Nor should it seem so wonderful that the intercourse of sexes in this species of bird should be interrupted in winter; since in many

animals, and particularly in bucks and does, the sexes herd separately, except at the season when commerce is necessary for the continuance of the breed. For this matter of the chaffinches see "*Fauna Suecica*," p. 58, and "*Systema Naturæ*," p. 318. I see every winter vast flights of hen-chaffinches, but none of cocks.

Your method of accounting for the periodical motions of the British singing birds, or birds of flight, is a very probable one; since the matter of food is a great regulator of the actions and proceedings of the brute creation; there is but one that can be set in competition with it, and that is love. But I cannot quite acquiesce with you in one circumstance when you advance that, "when they have thus feasted, they again separate into small parties of five or six, and get the best fare they can within a certain district, having no inducement to go in quest of fresh turned earth." Now if you mean that the business of congregating is quite at an end from the conclusion of wheat sowing to the season of barley and oats, it is not the case with us; for larks and chaffinches, and particularly linnets, flock and congregate as much in the very dead of winter as when the husbandman is busy with his ploughs and harrows.

Sure there can be no doubt but that woodcocks and fieldfares leave us in the spring, in order to cross the seas, and to retire to some districts more suitable to the

purpose of breeding. That the former pair before they retire, and that the hens are forward with egg, I myself, when I was a sportsman, have often experienced. It cannot indeed be denied but that now and then we hear of a woodcock's nest, or young birds, discovered in some part or other of this island; but then they are all always mentioned as rarities, and somewhat out of the common course of things: but as to redwings and fieldfares, no sportsman or naturalist has ever yet, that I could hear, pretended to have found the nest or young of those species in any part of these kingdoms. And I the more admire at this instance as extraordinary, since, to all appearance, the same food in summer as well as in winter might support them here which maintains their congeners, the black-birds and thrushes, did they choose to stay the summer through. From hence it appears that it is not food alone which determines some species of birds with regard to their stay or departure. Fieldfares or redwings disappear sooner or later according as the warm weather comes on earlier or later. For I well remember, after that dreadful winter 1739-40, that cold north-east winds continued to blow on through April and May, and that these kind of birds (what few remained of them) did not depart as usual, but were seen lingering about till the beginning of June.

The best authority that we can have for the nidifi-

cation of the birds above-mentioned in any district, is the testimony of faunists that have written professedly the natural history of particular countries. Now as to the fieldfare, Linnæus, in his "Fauna Suecica," says of it, that "*maximis in arboribus nidificat*;" and of the redwing he says, in the same place, that "*nidificat in mediis arbusculis, sive sepibus; ova sex cæruleo-viridia maculis nigris variis*." Hence we may be assured that fieldfares and redwings build in Sweden. Scopoli says, in his "Annus Primus," of the woodcock, that "*nupta ad nos venit circa æquinocmium vernale*;" meaning in Tyrol, of which he is a native. And afterwards he adds "*nidificat in paludibus alpinis: ova ponit 3-5*." It does not appear from Kramer that woodcocks breed at all in Austria; but he says, "*Avis hæc septentrionalium provinciarum æstivo tempore incola est; ubi plerumque nidificat. Appropinquante hyeme australiores provincias petit; hinc circa plenilunium mensis Octobris plerumque Austriam transmigrat. Tunc rursus circa plenilunium potissimum mensis Martii per Austriam matrimonio juncta ad septentrionales provincias redit*." For the whole passage (which I have abridged) see "Elenchus," etc., p. 351. This seems to be a full proof of the migration of woodcocks; though little is proved concerning the place of breeding.

P.S.—There fell in the county of Rutland, in three

weeks of this present very wet weather, seven inches and a half of rain, which is more than has fallen in any three weeks for these thirty years past in that part of the world. A mean quantity in that county for one year is twenty inches and a half.

LETTER IX.

FYFIELD, near ANDOVER, *Feb. 12th, 1772.*

DEAR SIR,—You are, I know, no great friend to migration; and the well-attested accounts from various parts of the kingdom seem to justify you in your suspicions, that at least many of the swallow kind do not leave us in the winter, but lay themselves up like insects and bats in a torpid state, and slumber away the more uncomfortable months till the return of the sun and fine weather awakens them.

But then we must not, I think, deny migration in general; because migration certainly does subsist in some places, as my brother in Andalusia has fully informed me. Of the motions of these birds he has ocular demonstration, for many weeks together, both spring and fall; during which periods myriads of the swallow kind traverse the straits from north to

south, and from south to north, according to the season. And these vast migrations consist not only of hirundines but of bee-birds, hoopoes, *Oro pendolos*, or golden thrushes, etc., etc., and also of many of our soft-billed summer birds of passage; and moreover of birds which never leave us, such as all the various sorts of hawks and kites. Old Belon, two hundred years ago, gives a curious account of the incredible armies of hawks and kites which he saw in the spring-time traversing the Thracian Bosphorus from Asia to Europe. Besides the above mentioned, he remarks that the procession is swelled by whole troops of eagles and vultures.

Now it is no wonder that birds residing in Africa should retreat before the sun as it advances, and retire to milder regions, and especially birds of prey, whose blood being heated with hot animal food, are more impatient of a sultry climate; but then I cannot help wondering why kites and hawks, and such hardy birds as are known to defy all the severity of England, and even of Sweden and all north Europe, should want to migrate from the south of Europe, and be dissatisfied with the winters of Andalusia.

It does not appear to me that much stress may be laid on the difficulty and hazard that birds must run in their migrations, by reason of vast oceans, cross winds, etc.; because, if we reflect, a bird may travel from England to the Equator without launching out and

exposing itself to boundless seas, and that by crossing the water at Dover, and again at Gibraltar. And I with the more confidence advance this obvious remark, because my brother has always found that some of his birds, and particularly the swallow kind, are very sparing of their pains in crossing the Mediterranean; for when arrived at Gibraltar they do not

. . . "Rang'd in figure wedge their way,
 And set forth
 Their airy caravan high over seas
 Flying, and over lands with mutual wing
 Easing their flight:" —MILTON.

but scout and hurry along in little detached parties of six or seven in a company; and sweeping low, just over the surface of the land and water, direct their course to the opposite continent at the narrowest passage they can find. They usually slope across the bay to the south-west, and so pass over opposite to Tangier, which, it seems, is the narrowest space.

In former letters we have considered whether it was probable that woodcocks in moonshiny nights cross the German ocean from Scandinavia. As a proof that birds of less speed may pass that sea, considerable as it is, I shall relate the following incident, which, though mentioned to have happened so many years ago, was strictly matter of fact:—As some people

were shooting in the parish of Trotton, in the county of Sussex, they killed a duck in that dreadful winter, 1708-9, with a silver collar about its neck, on which were engraven the arms of the king of Denmark. This anecdote the rector of Trotton at that time has often told to a near relation of mine; and to the best of my remembrance, the collar was in the possession of the rector.

At present I do not know anybody near the seaside that will take the trouble to remark at what time of the moon woodcocks first come; if I lived near the sea myself I would soon tell you more of the matter. One thing I used to observe when I was a sportsman, that there were times in which woodcocks were so sluggish and sleepy that they would drop again when flushed just before the spaniels, nay, just at the muzzle of a gun that had been fired at them; whether this strange laziness was the effect of a recent fatiguing journey I shall not presume to say.

Nightingales not only never reach Northumberland and Scotland, but also, as I have been always told, Devonshire and Cornwall. In those two last counties we cannot attribute the failure of them to the want of warmth; the defect in the west is rather a presumptive argument that these birds come over to us from the continent at the narrowest passage, and do not stroll so far westward.

Let me hear from your own observation whether skylarks do not dust. I think they do ; and if they do, whether they wash also.

The *Alauda pratensis* of Ray was the poor dupe that was educating the booby of a cuckoo mentioned in my letter of October last.

Your letter came too late for me to procure a ring-ouzel for Mr. Tunstal during their autumnal visit ; but I will endeavour to get him one when they call on us again in April. I am glad that you and that gentleman saw my Andalusian birds ; I hope they answered your expectation. Royston, or grey crows, are winter birds that come much about the same time with the woodcock ; they, like the fieldfare and redwing, have no apparent reason for migration ; for as they fare in the winter like their congeners, so might they in all appearance in the summer. Was not Tenant, when a boy, mistaken ? did he not find a missel-thrush's nest, and take it for the nest of a fieldfare ?

The stock-dove, or wood-pigeon, *Cenas Raii*, is the last winter bird of passage which appears with us ; it is not seen till towards the end of November : about twenty years ago they abounded in the district of Selborne ; and strings of them were seen morning and evening that reached a mile or more ; but since the beechen woods have been greatly thinned they are much decreased in number. The ring-dove, *Palumbus*

Raii, stays with us the whole year, and breeds several times through the summer.

Before I received your letter of October last I had just remarked in my journal that the trees were unusually green. This uncommon verdure lasted on late into November; and may be accounted for from a late spring, a cool and moist summer; but more particularly from vast armies of chafers, or tree-beetles, which, in many places, reduced whole woods to a leafless naked state. These trees shot again at Midsummer, and then retained their foliage till very late in the year.

My musical friend, at whose house I am now visiting, has tried all the owls that are his near neighbours with a pitch-pipe set at concert pitch, and finds they all hoot in B flat. He will examine the nightingales next spring.

I am, etc., etc.

LETTER X.

SELBORNE, *Aug. 1st.*, 1771.

DEAR SIR,—From what follows, it will appear that neither owls nor cuckoos keep to one note. A friend remarks that many (most) of his owls hoot in B flat;

but that one went almost half a note below A. The pipe he tried their notes by was a common half-crown pitch-pipe, such as masters use for tuning of harpsichords; it was the common London pitch.

A neighbour of mine, who is said to have a nice ear, remarks that the owls about this village hoot in three different keys, in G flat, or F sharp, in B flat and A flat. He heard two hooting to each other, the one in A flat, and the other in B flat. *Query*: Do these different notes proceed from different species, or only from various individuals? The same person finds upon trial that the note of the cuckoo (of which we have but one species) varies in different individuals; for, about Selborne wood, he found they were mostly in D: he heard two sing together, the one in D, the other in D sharp, who made a disagreeable concert: he afterwards heard one in D sharp, and about Wolmer Forest some in C. As to nightingales, he says that their notes are so short, and their transitions so rapid, that he cannot well ascertain their key. Perhaps in a cage, and in a room, their notes may be more distinguishable. This person has tried to settle the notes of a swift, and of several other small birds, but cannot bring them to any criterion.

As I have often remarked that redwings are some of the first birds that suffer with us in severe weather, it is no wonder at all that they retreat from Scandinavian

winters: and much more the *ordo* of *grallæ*, who, all to a bird, forsake the northern parts of Europe at the approach of winter. "*Grallæ tanquam conjuratæ, unanimiter in fugam se cojiciunt; ne earum unicam quidem inter nos habitantem invenire possimus; ut enim æstate in australibus degere nequeunt ob defectum lumbricorum, terramque siccam; ita nec in frigidis ob eandem causam,*" says Ekmarck the Swede, in his ingenious little treatise called "*Migrationes Avium,*" which by all means you ought to read while your thoughts run on the subject of migration. See "*Amœnitates Academicæ,*" vol. iv., p. 565.

Birds may be so circumstanced as to be obliged to migrate in one country, and not in another: but the *grallæ* (which procure their food from marshes and boggy grounds), must in winter forsake the more northerly parts of Europe, or perish for want of food.

I am glad you are making inquiries from Linnæus concerning the woodcock; it is expected of him that he should be able to account for the motions and manner of life of the animals of his own "*Fauna.*"

Faunists, as you observe, are too apt to acquiesce in bare descriptions, and a few synonyms: the reason is plain; because all that may be done at home in a man's study, but the investigation of the life and conversation of animals, is a concern of much more trouble and difficulty, and is not to be attained but by the active

and inquisitive, and by those that reside much in the country.

Foreign systematics are, I observe, much too vague in their specific differences, which are almost universally constituted by one or two particular marks, the rest of the description running in general terms. But our countryman, the excellent Mr. Ray, is the only describer that conveys some precise idea in every term or word, maintaining his superiority over his followers and imitators in spite of the advantage of fresh discoveries and modern information.

At this distance of years it is not in my power to recollect at what periods woodcocks used to be sluggish or alert when I was a sportsman: but, upon my mentioning this circumstance to a friend, he thinks he has observed them to be remarkably listless against snowy foul weather; if this should be the case, then the inaptitude for flying arises only from an eagerness for food; as sheep are observed to be very intent on grazing against stormy wet evenings.

I am, etc., etc.

LETTER XI.

SELBORNE, *Feb. 8th, 1772.*

DEAR SIR,—When I ride about in the winter, and see such prodigious flocks of various kinds of birds, I cannot help admiring at these congregations, and wishing that it was in my power to account for those appearances almost peculiar to the season. The two great motives which regulate the proceedings of the brute creation are love and hunger; the former incites animals to perpetuate their kind; the latter induces them to preserve individuals: whether either of these should seem to be the ruling passion in the matter of congregating is to be considered. As to love, that is out of the question at a time of the year when that soft passion is not indulged: besides, during the amorous season, such a jealousy prevails between the male birds that they can hardly bear to be together in the same hedge or field. Most of the singing and elation of spirits of that time seem to me to be the effect of rivalry and emulation: and it is to this spirit of jealousy that I chiefly attribute the equal dispersion of birds in the spring over the face of the country.

Now as to the business of food: as these animals are actuated by instinct to hunt for necessary food,

they should not, one would suppose, crowd together in pursuit of sustenance at a time when it is most likely to fail; yet such associations do take place in hard weather chiefly, and thicken as the severity increases. As some kind of self-interest and self-defence is no doubt the motive for the proceeding, may it not arise from the helplessness of their state in such rigorous seasons; as men crowd together, when under great calamities, though they know not why. Perhaps approximation may dispel some degree of cold, and a crowd may make each individual appear safer from the ravages of birds of prey and other dangers.

If I admire when I see how much congenerous birds love to congregate, I am the more struck when I see incongruous ones in such strict amity. If we do not much wonder to see a flock of rooks usually attended by a train of daws, yet it is strange that the former should so frequently have a flight of starlings for their satellites. Is it because rooks have a more discerning scent than their attendants, and can lead them to spots more productive of food? Anatomists say that rooks, by reason of two large nerves which run down between the eyes into the upper mandible, have a more delicate feeling in their beaks than other round-billed birds, and can grope for their meat when out of sight. Perhaps, then, their associates attend them on the motive of interest, as greyhounds wait on the

motions of their finders, and as lions are said to do on the yelpings of jackals. Lapwings and starlings sometimes associate.

LETTER XII.

March 9th, 1772.

DEAR SIR,—As a gentleman and myself were walking on the 4th of last November, round the sea-banks at Newhaven, near the mouth of the Lewes river, in pursuit of natural knowledge, we were surprised to see three house-swallows gliding very swiftly by us. That morning was rather chilly, with the wind at north-west; but the tenor of the weather for some time before had been delicate, and the noons remarkably warm. From this incident, and from repeated accounts which I meet with, I am more and more induced to believe that many of the swallow kind do not depart from this island, but lay themselves up in holes and caverns, and do, insect-like and bat-like, come forth at mild times, and then retire again to their *latebræ*. Nor make I the least doubt but that, if I lived at Newhaven, Seaford, Brighthelmstone, or any of those towns near the chalk cliffs of the Sussex coast, by proper

observations, I should see swallows stirring at periods of the winter, when the noons were soft and inviting, and the sun warm and invigorating. And I am the more of this opinion from what I have remarked during some of our late springs, that though some swallows did make their appearance about the usual time, viz., the 13th or 14th April, yet meeting with a harsh reception, and blustering cold north-east winds, they immediately withdrew, absconding for several days, till the weather gave them better encouragement.

LETTER XIII.

April 12th, 1772.

DEAR SIR,—While I was in Sussex last autumn, my residence was at the village near Lewes, from whence I had formerly the pleasure of writing to you. On the 1st November I remarked that the old tortoise, formerly mentioned, began first to dig the ground in order to the forming its hybernaculum, which it had fixed on just beside a great tuft of hepaticas. It scrapes out the ground with its fore-feet, and throws it up over its back with its hind; but the motion of its legs is ridiculously slow, little exceeding the hour-hand

of a clock, and suitable to the composure of an animal said to be a whole month in performing one feat of copulation. Nothing can be more assiduous than this creature night and day in scooping the earth, and forcing its great body into the cavity; but, as the noons of that season proved unusually warm and sunny, it was continually interrupted, and called forth by the heat in the middle of the day; and though I continued there till the 13th November, yet the work remained unfinished. Harsher weather, and frosty mornings, would have quickened its operations. No part of its behaviour ever struck me more than the extreme timidity it always expresses with regard to rain; for though it has a shell that would secure it against the wheel of a loaded cart, yet does it discover as much solicitude about rain as a lady dressed in all her best attire, shuffling away on the first sprinklings, and running its head up in a corner. If attended to, it becomes an excellent weather-glass, for as sure as it walks elate, and as it were on tiptoe, feeding with great earnestness in a morning, so sure will it rain before night. It is totally a diurnal animal, and never pretends to stir after it becomes dark. The tortoise, like other reptiles, has an arbitrary stomach as well as lungs; and can refrain from eating as well as breathing for a great part of the year. When first awakened it eats nothing, nor again in the autumn before it retires;

through the height of the summer it feeds voraciously, devouring all the food that comes in its way. I was much taken with its sagacity in discerning those that do it kind offices; for, as soon as the good old lady comes in sight who has waited on it for more than thirty years, it hobbles towards its benefactress with awkward alacrity, but remains inattentive to strangers. Thus, not only "the ox knoweth his owner, and the ass his master's crib," but the most abject reptile and torpid of beings distinguishes the hand that feeds it, and is touched with the feelings of gratitude!

I am, etc., etc.

P.S.—In about three days after I left Sussex, the tortoise retired into the ground under the hepatica.

LETTER XIV.

SELBORNE, *March 26th, 1773.*

DEAR SIR,—The more I reflect on the *σφοδρῆ* of animals, the more I am astonished at its effects. Nor is the violence of this affection more wonderful than the shortness of its duration. Thus every hen is in her turn the virago of the yard, in proportion to the

helplessness of her brood, and will fly in the face of a dog or a sow in defence of those chickens, which in a few weeks she will drive before her with relentless cruelty.

This affection sublimates the passions, quickens the invention, and sharpens the sagacity of the brute creation. Thus a hen, just become a mother, is no longer that placid bird she used to be, but with feathers standing on end, wings hovering, and clocking note, she runs about like one possessed. Dams will throw themselves in the way of the greatest danger in order to avert it from their progeny. Thus a partridge will tumble along before a sportsman in order to draw away the dogs from her helpless covey. In the time of nidification the most feeble birds will assault the most rapacious. All the hirundines of a village are up in arms at the sight of a hawk, whom they will persecute till he leaves that district. A very exact observer has often remarked that a pair of ravens nesting in the rock of Gibraltar, would suffer no vulture or eagle to rest near their station, but would drive them from the hill with an amazing fury; even the blue thrush at the season of breeding would dart out from the clefts of the rocks to chase away the kestrel, or the sparrow-hawk. If you stand near the nest of a bird that has young, she will not be induced to betray them by an inadvertent fondness, but will

wait about at a distance with meat in her mouth for an hour together.

Should I farther corroborate what I have advanced above by some anecdotes which I probably may have mentioned before in conversation, yet you will, I trust, pardon the repetition for the sake of the illustration.

The fly-catcher of the "Zoology" (the *Stoparola* of Ray), builds every year in the vines that grow on the walls of my house. A pair of these little birds had one year inadvertently placed their nest on a naked bough, perhaps in a shady time, not being aware of the inconvenience that followed. But a hot sunny season coming on before the brood was half fledged, the reflection of the wall became insupportable, and must inevitably have destroyed the tender young, had not affection suggested an expedient, and prompted the parent birds to hover over the nest all the hotter hours, while with wings expanded, and mouths gaping for breath, they screened off the heat from their suffering offspring.

A farther instance I once saw of notable sagacity in a willow-wren, which had built in a bank in my fields. This bird a friend and myself had observed as she sat in her nest; but were particularly careful not to disturb her, though we saw she eyed us with some degree of jealousy. Some days after, as we passed that way, we were desirous of remarking how this

brood went on, but no nest could be found, till I happened to take a large bundle of long green moss, as it were, carelessly thrown over the nest in order to dodge the eye of any impertinent intruder.

A still more remarkable mixture of sagacity and instinct occurred to me one day as my people were pulling off the lining of a hot-bed, in order to add some fresh dung. From out of the side of this bed leaped an animal with great agility, that made a most grotesque figure; nor was it without great difficulty that it could be taken, when it proved to be a large white-bellied field-mouse with three or four young clinging to her teats by their mouths and feet. It was amazing that the desultory and rapid motions of this dam should not oblige her litter to quit their hold, especially when it appeared that they were so young as to be both naked and blind!

To these instances of tender attachment, many more of which might be daily discovered by those that are studious of nature, may be opposed that rage of affection, that monstrous perversion of the *στοργή*, which induces some females of the brute creation to devour their young because their owners have handled them too freely, or removed them from place to place! Swine, and sometimes the more gentle race of dogs and cats, are guilty of this horrid and preposterous murder. When I hear now and then of an abandoned mother

that destroys her offspring, I am not so much amazed, since reason perverted, and the bad passions let loose, are capable of any enormity; but why the parental feelings of brutes, that usually flow in one most uniform tenor should sometimes be so extravagantly diverted, I leave to abler philosophers than myself to determine.

I am, etc.

END OF VOL. I.

Selections from Cassell & Company's Publications.

- A Bitter Heritage.** By J. BLOUNDELLE-BURTON. 6s.
Adventure, The World of. Cheap Edition. Illustrated. 3 Vols., 5s. each.
Animals for Young People, Popular History of. By HENRY SCHERREN, F.Z.S. Illustrated. 7s. 6d.
Art, Sacred. With nearly 200 full-page Illustrations. 6s.
Art, The Magazine of. With about 800 Illustrations and a series of Special Plates. Yearly Vol., 21s. Monthly, 1s. 4d.
Ballads and Songs. By WILLIAM M. THACKERAY. Illustrated. 6s.
Ballads, British. With Several Hundred Original Illustrations. *Cheap Edition.* Two Vols. in One, 7s. 6d.
Battles of the Nineteenth Century. With Several Hundred stirring Illustrations. Complete in Two Vols., 9s. each.
"Belle Sauvage" Library, The. Cloth, 2s. each. 'A list of the Volumes forwarded post free on application.
Berry, D.D., Life of the Rev. O. A. 6s.
Bible Dictionary, Cassell's Concise. By the Rev. ROBERT HUNTER, LL.D. Illustrated. 7s. 6d.
Biographical Dictionary, Cassell's New. *Cheap Edition.* 3s. 6d.
Black Arrow, The. By R. L. STEVENSON. Illustrated. 3s. 6d.
Britain's Roll of Glory; or, the Victoria Cross, its Heroes and their Valour. By D. H. PARRY. Illustrated. 3s. 6d.
British Battles on Land and Sea. By JAMES GRANT. With about 800 Illustrations. *Cheap Edition* in Four Vols., 3s. 6d. each.
British Birds' Nests: How, Where, and When to Find and Identify them. By R. KEARTON, F.Z.S. With nearly 130 Illustrations of Nests, Eggs, Young, etc., from Photographs. 21s.
Building World. The Illustrated Journal for the Building Trades. Half-Yearly Vol., 4s. 6d. Weekly, 1d. Monthly, 6d.
Bunyan, Cassell's Illustrated. *Cheap Edition.* 3s. 6d.
By a Hair's-Breadth. By HEADON HILL. Illustrated Edition, 6s.
Cassell's Magazine. Illustrated. Yearly Vol., 8s. Half-Yearly Vol., 5s. Monthly, 6d.
Cathedrals, Abbeys, and Churches of England and Wales, The: Descriptive, Historical, Pictorial. *Popular Edition.* Two Vols. 12s. the set.
Catriona. By R. L. STEVENSON. *People's Edition,* 6d.
Child's Bible, The. With 200 Illustrations. 150th Thousand. 7s. 6d.
Child's Life of Christ, The. With 200 Illustrations. *Cheap Edition,* 7s. 6d.
Chums. Yearly Vol., Illustrated, 8s. Weekly, 1d. Monthly, 6d.
Church of England, The. A History for the People. By the Very Rev. H. D. M. SPENCE, D.D. Illustrated. In Four Vols., 6s. each.
Cities of the World. Illustrated. Four Vols. 7s. 6d. each.
Cookery, A Year's. By PHYLLIS BROWNE. *Cheap Edition,* 1s.
Cookery Book, Cassell's New Universal. By LIZZIE HERITAGE. Illustrated. Strongly bound in half-leather. 6s.
Cookery, Cassell's Dictionary of. With about 9,000 Recipes, and Key to the Principles of Cookery. *Cheap Edition,* 5s.
Cookery, Cassell's Shilling. 135th Thousand. Cloth, 1s.
Cookery for Common Ailments. *Cheap Edition,* 1s.
Cookery, Vegetarian. *Cheap Edition,* 1s.
Countries of the World, The. By ROBERT BROWN, M.A., Ph.D., etc. *Cheap Edition.* Illustrated. Vols. I. to V., 6s. each.
Cyclopædia, Cassell's Miniature. With 30,000 subjects. 1s. or 1s. 6d.
Cupid's Garden. By ELLEN THORNECROFT FOWLER. 3s. 6d.
Dainty Breakfasts, The Dictionary of. 1s.

- Dead Man's Rock.** By O. *People's Edition*, 6d.
- "Death or Glory Boys, The."** The Story of the 17th Lancers. By D. H. PARRY. With Frontispiece, 6s.
- Doré's Dante's Inferno.** Illustrated by GUSTAVE DORÉ. *Popular Edition*. With Preface by A. J. BUTLER. Cloth gilt or buckram, 7s. 6d.
- Doré's Milton's Paradise Lost.** Illustrated by DORÉ. 4to, 21s. *Popular Edition*. Cloth gilt or buckram gilt, 7s. 6d.
- Doré's Dante's Purgatory and Paradise.** Illustrated by GUSTAVE DORÉ. Cloth gilt or buckram. *Cheap Edition*, 7s. 6d.
- Doré Don Quixote, The.** With about 400 Illustrations by GUSTAVE DORÉ. *Cheap Edition*, 10s. 6d.
- Earth, Our, and its Story.** By Dr. ROBERT BROWN, F.L.S. Three Vols. With Coloured Plates and Wood Engravings. 9s. each.
- Edinburgh, Old and New.** Three Vols. Illustrated. 9s. each.
- Electric Current, The.** How Produced and How Used. By R. MULLINEUX WALMSLEY, D.Sc., etc. Illustrated. 10s. 6d.
- Electricity, Practical.** By Prof. W. E. AYRTON, F.R.S. Illd. 9s.
- Electricity in the Service of Man.** *New and Cheaper Edition*. Illustrated. 7s. 6d.
- Encyclopædic Dictionary, The.** In 14 Divisional Vols. 10s. 6d. each.
- England, Cassell's Illustrated History of.** *Revised Edition*. With 2,000 Illustrations. Embossed cloth, Eight Vols., £4 net.
- England, Social.** Edited by H. D. TRAILL, D.C.L. (Completion.) Vols. I., II., and III., 15s. each. Vols. IV. and V., 17s. each. Vol. VI., 18s.
- England and Wales, Pictorial.** With upwards of 320 Illustrations prepared from Copyright Photographs. 9s.
- English Dictionary, Cassell's.** Giving Definitions of more than 100,000 Words and Phrases. *Cheap Edition*, 3s. 6d.
- English History, Dictionary of.** *New and Revised Edition*. 7s. 6d.
- English Literature, A First Sketch of, from the Earliest Period to the Present Time.** By Prof. HENRY MORLEY. 7s. 6d.
- English Literature, Library of.** By Prof. HENRY MORLEY. 5 Vols. 7s. 6d. each.
- English Literature, The Story of.** By ANNA BUCKLAND. 3s. 6d.
- English Writers.** By Prof. HENRY MORLEY. Vols. I. to XI. 5s. each.
- Family Doctor, Cassell's.** By A MEDICAL MAN. Illustrated. 10s. 6d.
- Far East, The New.** By ARTHUR DIOSY. Illustrated. 16s.
- Farrar, The Very Rev. Dean, Works by:—**
THE LIFE OF CHRIST, Library Edition, 24s.; *Cheap Illustrated Edition*, 3s. 6d., 7s. 6d., and 10s. 6d.
THE LIFE AND WORK OF ST. PAUL. Library Edition, 24s.; Illd. Edition, 21s.; *Cheap Illd. Edition*, 3s. 6d. and 7s. 6d.
EARLY DAYS OF CHRISTIANITY. Library Edition, 24s.; *Popular Edition*, 7s. 6d.; *Cheap Edition*, 3s. 6d.
- Father Stafford.** A Novel. By ANTHONY HOPE. 3s. 6d.
- Football, The Rugby Union Game.** Illustrated. 7s. 6d.
- France-German War, Cassell's History of the.** *New Issue*. In Two Vols. Containing about 500 Illustrations. 9s. each.
- French-English and English-French Dictionary.** Cloth, 3s. 6d.; half-morocco, 5s.
- Garden of Swords, The.** By MAX PEMBERTON. 6s.
- German Dictionary, Cassell's.** German-English, English-German. By ELIZABETH WEIR. Cloth, 3s. 6d.; half-morocco, 5s.
- Girl at Oobhurst, The.** By F. R. STOCKTON. 6s.

- Gleanings from Popular Authors. Illustrated. *Cheap Edition*. 3s. 6d.
- Grace O'Malley, Princess and Pirate. By ROBERT MACHRAY. 6s.
- Guests of Mine Host. By MARIAN BOWER. 6s.
- Heavens, The Story of the. By Sir ROBERT BALL. Illustrated. 10s. 6d.
- Holy Land and the Bible, The. By the Rev. C. GEIKIE, D.D., LL.D. Edin. *Cheap Edition*, with 24 Collotype Plates, 12s. 6d.
- Horses and Dogs. By O. EERELMAN. With Descriptive Text. Translated from the Dutch by CLARA BELL. With Author's Portrait as Frontispiece and 15 Full-page and other Illustrations. 25s. net.
- Ill-gotten Gold: A Story of a Great Wrong and a Great Revenge. By W. G. TARBET. 6s.
- In Royal Purple. By WILLIAM PIGOTT. 6s.
- India, History of. Illustrated. 7s. 6d.
- Impregnable City, The. By MAX PEMBERTON. *Cheap Edition*. Illustrated. 3s. 6d.
- Iron Pirate, The. By MAX PEMBERTON. *Cheap Edition*. Illus. 3s. 6d.
- Jenetha's Venture. By COLONEL HARCOURT. 6s.
- Kidnapped. By R. L. STEVENSON. *People's Edition*, 6d.
- King Solomon's Mines. By H. RIDER HAGGARD. *People's Edition*. Illustrated. 6d.
- Kronstadt. By MAX PEMBERTON. Illustrated. 6s.
- Latin Dictionary, Cassell's (LATIN-ENGLISH AND ENGLISH-LATIN). Cloth, 3s. 6d.; half morocco, 5s.
- Limited Success, A. By SARAH PITT. 6s.
- "Little Folks." Half-yearly Volumes, 3s. 6d.; Monthly, 6d.
- Little Minister, The. By J. M. BARRIE. *Illustrated Edition*, 6s.
- Little Novice, The. By ALIX KING. 6s.
- London, The Queen's. With about 450 Exquisite Views of London and its Environs. *New Edition*, 10s. 6d.
- Loveday. A Tale of a Stirring Time. By A. E. WICKHAM. Illus. 3s. 6d.
- Manchester, Old and New. By WILLIAM ARTHUR SHAW, M.A. Illustrated. Three Vols., 31s. 6d.
- Man in Black, The. By STANLEY WEYMAN. Illustrated. 3s. 6d.
- Master of Ballantrae, The. By R. L. STEVENSON. Illus. *People's Edition*, 6d.
- Mediterranean, Picturesque, The. Illustrated. Two Vols., 42s. each.
- Memoirs of a Minister of France, From The. By STANLEY WEYMAN. 3s. 6d.
- Merry Girls of England. By L. T. MEADE. Illustrated. 3s. 6d.
- Micky Magee's Menagerie; or, Strange Animals and their Doings. By S. H. HAMER. Illustrated by HARRY NEILSON. 1s. 6d.
- Modern Europe, A History of. By C. A. FYFFE, M.A. 10s. 6d.
- Mrs. Cliff's Yacht. By FRANK STOCKTON. 6s.
- My Lord Duke. By E. W. HORNUNG. 6s.
- Natural History, Cassell's. With about 2,000 Illustrations. *Cheap Edition*, in Three Double Vols., 6s. each.
- Nature and a Camera, With. By RICHARD KEARTON, F.Z.S. Illustrated with Frontispiece and 180 Pictures from Photographs by CHERRY KEARTON. 21s.
- New Zealand, Pictorial. With Preface by Sir W. B. PERCIVAL, K.C.M.G., Agent-General for New Zealand. Illustrated. 6s.
- Newman Hall. An Autobiography. 12s. 6d.
- Our Own Country. Six Vols. Illustrated. Three Double Vols., 5s. ea

Selections from Cassell & Company's Publications.

- Our Rarer British Breeding Birds: Their Nests, Eggs, and Summer Haunts.** By RICHARD KEARTON, F.Z.S. With about 70 Illustrations taken direct from Nature by CHERRY KEARTON. 7s. 6d.
- Peel, Sir R.** By LORD ROSEBERY. 2s. 6d.
- Penny Magazine, The New.** 64 Large Pages (in Cover). Profusely Illustrated. Quarterly Volumes, 2s. 6d. each.
- Phrase and Fable, Dictionary of.** By the Rev. Dr. BREWER. *Entirely New, Enlarged, and Revised Edition.* 10s. 6d.
- Popular Educator, Cassell's.** In 8 Vols., 5s. each.
- Portrait Gallery, The Cabinet.** In Five Series, each containing 36 Cabinet Photographs of Eminent Men and Women. 15s. each.
- Potsherds.** By Mrs. HENRY BIRCHENOUGH. 6s.
- Puritan's Wife, A.** By MAX PEMBERTON. Illustrated. 6s.
- Queen's Empire, The.** In Two Vols. With about 700 Illustrations. 9s. each.
- Q's Works, Uniform Edition of.** 5s. each.
- | | |
|-----------------------|------------------------------------------------|
| Dead Man's Rock. | The Astonishing History of Troy Town. |
| The Splendid Spur. | "I Saw Three Ships," and other Winter's Tales. |
| The Blue Pavilions. | Noughts and Crosses. |
| The Delectable Duchy. | Wandering Heath. Short Stories. |
- "Quiver" Yearly Volume, The.** 7s. 6d. (Also Monthly, 6d.)
- Rebellion of Lil Carrington, The.** By L. T. MEADE. Illus. 3s. 6d.
- Robinson Crusoe, Cassell's Fine-Art Edition of.** *Cheap Edition.* Cloth, 3s. 6d.; or buckram, 5s.
- Rogue's March, The.** By E. W. HORNING. 6s.
- Roxane.** By LOUIS CRESWICKE. 6s.
- Ruskin, John.** A Sketch of his Life, Work, and Opinions. With Personal Reminiscences. By M. H. SPIELMANN. With a Paper by Prof. RUSKIN, entitled "Black Arts." Illustrated. 5s.
- Saturday Journal, Cassell's.** Illustrated. Yearly Volume, 7s. 6d. Weekly, 1d.; Monthly, 6d.
- Science for All.** Illustrated. *Cheap Edition.* Five Vols. 3s. 6d. each.
- Sea, The Story of the.** Edited by Q. Illustrated. In 2 Vols., 5s. each.
- Sentimental Tommy.** By J. M. BARRIE. *Illustrated Edition.* 6s.
- Shakespeare, The Royal.** Illus. Three Vols. 10s. 6d. the set.
- Ship of Stars, The.** By A. T. QUILLER-COUCH. 6s.
- Star-Land.** By Sir ROBERT BALL. *Revised Edition,* 7s. 6d.
- Story of Francis Cludde, The.** By STANLEY WEYMAN. *Popular Edition,* 3s. 6d.
- Sun, The Story of the.** By Sir ROBERT BALL. Illustrated. 10s. 6d.
- Technical Educator, Cassell's.** In Six Volumes, 3s. 6d. each.
- Treasure Island.** By R. L. STEVENSON. *People's Edition.* Illus. 6d.
- Universal History, Cassell's Illustrated.** Four Vols. 9s. each.
- Vizier of the Two-Horned Alexander, The.** By FRANK STOCKTON. 6s.
- What Cheer!** By W. CLARK RUSSELL. *Popular Edition,* 3s. 6d.
- Wild Life at Home: How to Study and Photograph It.** By R. KEARTON, F.Z.S. Illustrated. 6s.
- Work.** Half-Yearly Vol. 4s. 6d. Weekly, 1d., Monthly, 6d.
- Wrecker, The.** By R. L. STEVENSON and LLOYD OSBOURNE. 6s.
- Young Blood.** By E. W. HORNING. 6s.

Cassell & Company's Complete Catalogue, containing particulars of upwards of One Thousand Volumes, sent post free on application.

CASELL & COMPANY, LIMITED, Ludgate Hill, London.



